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A REVISION OF THE GENUS *DAPHNOPSIS**

LORIN I. NEVLING, JR.

ABSTRACT

The present revision of *Daphnopsis* (Thymelaeaceae) attempts to relate the sparse knowledge of morphologic and, particularly, taxonomic information into a single body which, it is hoped, will eventually lead to a better understanding of the genus. *Daphnopsis* has never been the subject of inclusive taxonomic revision since its foundation in 1824. Past and present knowledge of the genus is extremely meager and is generally limited to uncorrelated specific descriptions. In only a few instances have fragmentary taxonomic keys been provided and then never to more than a half-dozen species.

This revision is based upon the study of herbarium specimens from many of the more important herbaria of the world. These collections include most of the type specimens of the taxa treated in the revision.

The account includes a brief discussion of the inflorescence and its more prominent evolutionary trends. Anatomy and morphology of the flower are discussed with special emphasis on the corolla. Four basic modifications of the corolla are presented.

This revision recognizes two subgenera encompassing forty-six species. Subgenus *DAPHNOPSIS* is composed of thirty-four species, and subgenus *NEIVIRA* of twelve species. New taxa are *D. alainii*, *D. americana* ssp. *guatemalensis*, *D. brevifolia*, *D. equatorialis*, *D. hispaniolica*, *D. liebmannii*, *D. macrocarpa*, *D. mexiae*, and *D. perplexa* in subgenus *DAPHNOPSIS*, and *D. boliviana* and *D. sanctae-teresae* in subgenus *NEIVIRA*. *Daphnopsis anomala* (HBK.) Nevl. and several of the subspecies of *D. cuneata* and *D. americana* are new combinations. Analytical keys to the subgenera, species and subspecies are presented, as is a key to the American genera of the Thymelaeaceae. Each species is described, with particular emphasis on the inflorescence and the flower, and illustrated. The illustration includes the known range of the species, as determined by the specimens examined, and a semi-diagrammatic drawing of a staminate and a pistillate flower when possible. LORIN I. NEVLING, JR., Arnold Arboretum, Cambridge, Mass.

INTRODUCTION

Since the foundation of the thymelaeaceous genus *Daphnopsis* in 1824 by Martius and Zuccarini,¹ an abundance of specific and infraspecific epithets has accumulated which has never been the subject of inclusive taxonomic revision. Past and present knowledge of the genus is extremely meager and is generally limited to uncorrelated specific descriptions. In only a few instances have fragmentary taxonomic keys been provided, and then never to more than a half-dozen

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* An investigation carried out in the graduate laboratory of the Henry Shaw School of Botany of Washington University and submitted as part of a thesis in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

¹ Martius, C. F. P. de & J. G. Zuccarini, Nov. Gen. & Sp. 1:65. 1824.

species. What little is known of the genus has remained largely uncorrelated because of the inadequacies and difficulties involved in precise specific determination, the keystone of biological coordination and knowledge. The primary reason the taxonomy has been so cumbersome is that the plants are dioecious and the flowers small and relatively unattractive, conditions which make any study considerably difficult.

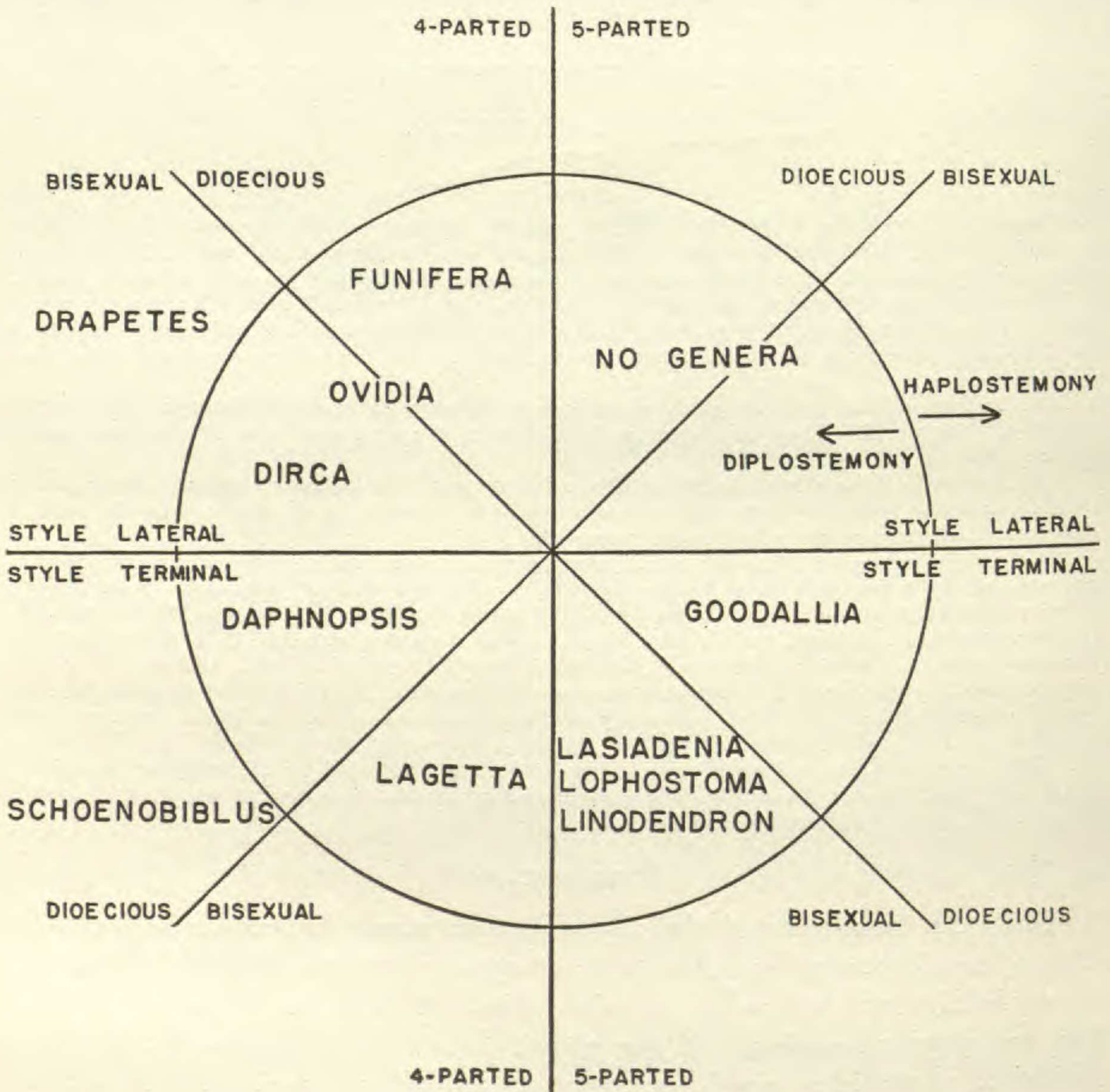


Fig. 1. Schematic Representation of the American Genera

Domke,² in 1934, published an excellent but generalized over-all account of the Thymelaeaceae, but to scarcely more than the generic level. I have interpreted *Daphnopsis* in a somewhat stricter sense than he so that it has been necessary to redefine more precisely the generic limits. The present revision, although incomplete in many respects, attempts to correlate the sparse knowledge of morphologic, and particularly, taxonomic information into a single body which, it is hoped, eventually will lead to a better understanding of the genus.

TAXONOMIC POSITION AND RELATIONSHIPS

The Thymelaeaceae are generally classified as a family of the order Myrtiflorae, whose flowers show a transition from perigyny, in the more primitive families, to epigyny, in the more advanced. The Thymelaeaceae, because of their perigynous flowers with superior ovary, are generally considered primitive within the order. The family is composed of approximately fifty-five genera of which eleven are represented in the New World. The largest New World genus is *Daphnopsis* which includes forty-six species.

The American genera, as a group, are poorly known but it is my intention to discuss *Daphnopsis* only in relation to them. The facts involved are derived from Domke's³ study and my personal observations. In order to present these facts in an objective manner I have used a diagrammatic scheme (Figure 1) which uses some of the more important morphologic trends. The scheme is divided by a median vertical line which separates the genera with 4-parted calyces from those with 5-parted calyces; the median horizontal line separates those genera with terminal styles from those with lateral styles; the diagonal lines divide each quarter into those genera with bisexual flowers from those with dioecious flowers; finally, the entire scheme is divided by the circle, diplostemonous genera within, haplostemonous genera without the periphery. Thus both levels of development and the relationships of the genera to them are presented without relying on hypothetical phylogenetic "trees".

It may be of interest to contrast my scheme with an abstract of the classification by Domke⁴ for which I supply only the American genera (Figure 2). There is a high correlation between the two schemes. Those American genera which Domke has indicated as of uncertain position all appear to me to be members of the same tribe, Dicranolepideae. The only disagreement I have with Domke concerns the placement of the genus *Drapetes* which I believe belongs in the subtribe Daphnopsinae of the Daphneae.

One interesting aspect of my scheme is the lack of genera in the upper right quadrat. I believe this means either that the lateral position of the style evolved after the establishment of the 4-parted calyx or that the 5-parted calyx members have become extinct. The former hypothesis seems to me to be the more probable. The same situation may be true for the development of haplostemony.

Within the genus, subgenus DAPHNOPSIS appears to be more generalized than

² Domke, W. Untersuchungen über die systematische und geographische Gliederung der Thymelaeaceen. Bibliotheca Bot. 27:1-151. 1934.

³ Domke, W. *ibid.* 1934.

⁴ Domke, W. *ibid.* 1934.

subgenus *NEIVIRA* on the basis of floral morphology. This is suggested by the comparatively wide range of petal and disc types as well as by certain inflorescence patterns found within subgenus *DAPHNOPSIS*. However, this subgenus also includes the most advanced and the most primitive members of the genus in all other respects save that of inflorescence position. I believe this indicates that subgenus *NEIVIRA* was derived from a small group of species after the major morphologic variations were established in what is now subgenus *DAPHNOPSIS*. This ancestral group of species possibly had some of the following characteristics: ability to flower from either the extra-axillary or the axillary position; petals connate into a faucal annulus or absent; disc annular to cupuliform, free.

A key to the currently accepted genera of American Thymelaeaceae has been furnished in the hope that it may be of some practical value and perhaps stimulate interest in the family or in the individual genera.

KEY TO THE AMERICAN GENERA OF THYMELAEACEAE

- a. Style terminal; flowers 4- or 5-parted, diplostemonous (except *Schoenobiblus*).
 - b. Flowers bisexual (or rarely dioecious?); ovary long-haired; stigma capitate or clavate.
 - c. Calyx tube 5-parted, cylindrical; stigma capitate or narrowly clavate; anthers at least short-filamented; inflorescences paniculiform or umbelliform.
 - d. Inflorescences paniculiform; calyx tube straight; stigma capitate; leaves opposite.
 -1. *LOPHOSTOMA*
 - dd. Inflorescences umbelliform; calyx tube straight or curved; stigma capitate or narrowly clavate; leaves alternate.
 - e. Calyx tube straight; stigma capitate.....2. *LASIADENIA*
 - ee. Calyx tube more or less curved; stigma narrowly clavate.....3. *LINODENDRON*
 - cc. Calyx tube 4-parted, urceolate; stigma broadly clavate; anthers sessile; inflorescences spiciform or racemiform.....4. *LAGETTA*
 - bb. Flowers dioecious; ovary long-haired, short-haired or glabrous; stigma capitate.
 - f. Inflorescences umbelliform to subracemiform; flowers 5-merous; calyx tube orifice with a dense ring of downward pointing hairs; thecae divergent at the base; pistillode reduced to a hairy umbo; ovary long-haired.....5. *GOODALLIA*
 - ff. Inflorescences umbelliform to racemiform; flowers 4-merous; calyx tube orifice glabrous; thecae united at the base; pistillode fusiform, tenpin-shaped or lageniform; ovary long- to short-haired or glabrous.
 - g. Inflorescences umbelliform to racemiform; flowers diplostemonous.....6. *DAPHNOPSIS*
 - gg. Inflorescences umbelliform; flowers haplostemonous.....7. *SCHOENOBIBLUS*
- aa. Style lateral; flowers 4-parted; diplostemonous (except *Drapetes*).
 - h. Flowers bisexual or rarely dioecious; calyx tube glabrous to short-haired within.
 - i. Inflorescences umbelliform; when flowers are diplostemonous the stamens borne at two levels.
 - j. Flowers diplostemonous; ovary short-haired or glabrous; small trees or shrubs with alternate macrophyllous leaves; bisexual or dioecious.....8. *OVIDIA*
 - jj. Flowers haplostemonous; ovary puberulent at least towards the apex; dwarf shrubs with decussate microphyllous leaves; bisexual.....9. *DRAPETES*
 - ii. Inflorescences racemiform; flowers diplostemonous, stamens borne at one level.....10. *DIRCA*
 - hh. Flowers dioecious; calyx tube long-haired within.....11. *FUNIFERA*

THE INFLORESCENCE AND THE FLOWER

Inflorescence: The inflorescence appears to be a highly complicated structure which has been derived from an unknown type. In a typical species of subgenus *DAPHNOPSIS*, *D. occidentalis*, the vegetative axis is characterized by true dichotomous branching; one of the branches continues as a vegetative axis, the other becomes floriferous. The floriferous axis is extra-axillary and bears no relation to the phyllotaxy; the structure is clearly sympodial. The flowers are in umbelliform

(in this species) to racemiform clusters which are ebracteate and indeterminate.

In *D. americana* both branches resulting from the dichotomy eventually become floriferous. However, the inflorescence is compounded by repeated dichotomies (as many as 9) of which the alternate axes bear a single deciduous bract approximately midway between the subsequent dichotomies. The structure thus formed has the appearance of a cincinnus. The flowers are borne in umbelliform clusters. In this species the resumption of vegetative growth is through the development of axillary buds subtending the first dichotomy.

In another species, *D. philippiana*, the flowers are in an umbelliform cluster which terminates the vegetative axis with the result that the new growth is through the development of the subtending buds. The new growth is either

CONSPECTUS GENERUM

1. Unterfam. Gonystyloideae
 2. Unterfam. Aquilarioideae
 3. Unterfam. Gilgiodaphnoideae
 4. Unterfam. Thymelaeoideae
 1. Tribus: Dicranolepideae
 1. Subtribus: Linostomatinae..... *Lophostoma*
 2. Subtribus: Dicranolepidinae
 2. Tribus: Phalerieae
 3. Tribus: Daphneae
 1. Subtribus: Wikstroemiinae
 2. Subtribus: Dendrostellerinae
 3. Subtribus: Daphnopsinae..... *Daphnopsis*
Funifera
Schoenobiblus
Ovidia
Lagetta
Dirca
 4. Subtribus: Daphninae
 5. Subtribus: Rhamnoneurinae
 4. Tribus: Gnidiaceae
 1. Subtribus: Thymelaeinae
 2. Subtribus: Gnidiinae
 3. Subtribus: Passerininae
 4. Subtribus: Kellertiinae
 5. Subtribus: Drapetinae..... *Drapetes*
 6. Subtribus: Pimeleinae
- Anhang: Thymelaeoideae weniger sicheren Anschlusses: *Goodallia*
Linodendron
Lasiadenia

Figure 2. Abstract of Domke's Familial Classification⁵

⁵ Domke, W. *ibid.* 1934.

vegetative or floriferous and, as a result, the inflorescence may be borne from the axillary position. Other species of subgenus *DAPHNOPSIS* also flower from the axillary position provided that the stem apex is injured or destroyed.

In subgenus *NEIVIRA*, the inflorescence is always axillary. The flowers are borne in ebracteate umbelliform or racemiform clusters. Typically, the axillary buds become fasciculate by proliferation and remain floriferous for many years. The base of the inflorescence is usually enclosed by a number of prophylls which have been described as bracts but actually are bud scales of the axillary buds.

The flower clusters are always indeterminate and ebracteate. The individual flowers are borne on secondary branches which are sometimes very reduced. An articulation (abscission zone) marks the conclusion of the secondary branch and the beginning of the pedicel and gives evidence that the single flower is all that remains of a cymule. Thus the flower clusters are indeterminate with determinate branches, and therefore thyrses.

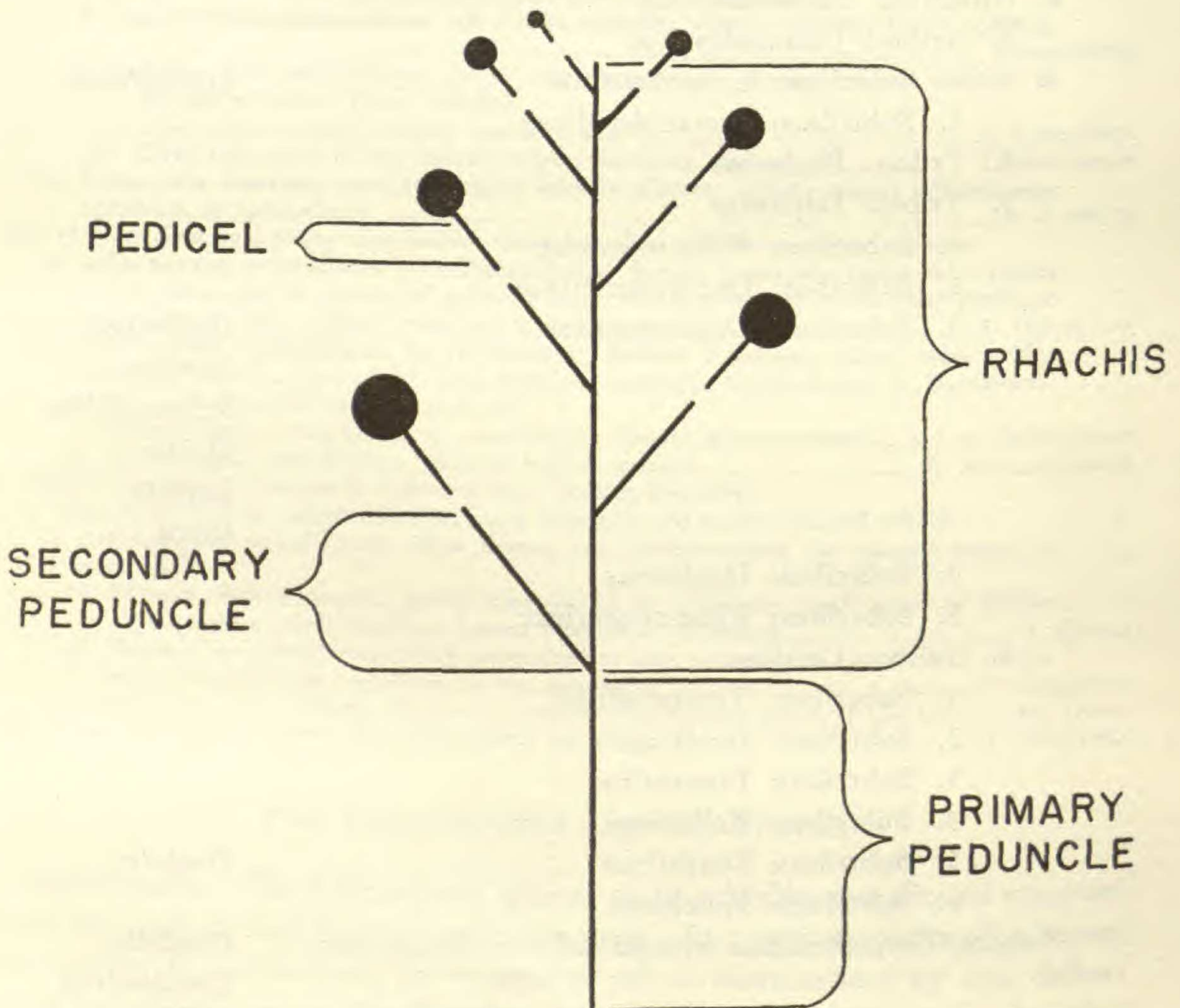


Fig. 3. Structure of the Inflorescence

Terms for the constituent parts of the inflorescence have been used in order to render its organizational structure immediately and easily understood. I have drawn a hypothetical inflorescence (Figure 3) to illustrate the use of the terms employed in this study. The proximal portion of the main axis, from the supporting stem to the first lateral branch, is called the *primary peduncle*; the extension of the main axis, from the first lateral branch to the apex, is termed the *rhachis*. The lateral branches, from the rhachis to the articulation is called the *secondary peduncle*; from the articulation to the expansion of the calyx tube is the *pedicel*.

Considerable variation in the structure of the inflorescence is found within the genus and particularly in subgenus DAPHNOPSIS. As a general rule, the rhachis is rather short throughout this subgenus so that the flowers are in umbelliform clusters. Some examples of species with umbelliform inflorescences and equally developed secondary peduncles and pedicels are *D. occidentalis*, *D. alainii* and *D. brasiliensis*.

In another development of the inflorescence, characterized by *D. punctulata*, *D. monocephala* and *D. pseudosalix*, the secondary peduncles and the pedicels are well-developed but the primary rhachis has elongated to give a subracemiform appearance.

Two other developments characteristic of this subgenus are: development of the pedicel at the expense of the secondary peduncles, exemplified by *D. brevifolia*, *D. perplexa* and *D. flavida* to mention a few; development of the secondary peduncles at the expense of the pedicel, exemplified by *D. liebmannii*, *D. radiata* and *D. ficina*. In *D. purdiei*, *D. mexiae* and *D. equatorialis* the secondary peduncles tend to become connate so as to form a cushion-like structure upon which the flowers are borne.

In subgenus NEIVIRA the species with umbelliform inflorescences are relatively few and are best characterized by *D. sellowiana*. The species with dense racemiform inflorescences are exemplified by *D. beta* and especially *D. espinosae*. In both of these species the secondary peduncles and the pedicels are equally developed. The lax racemiform inflorescence is found in *D. schwackeana*, *D. sanctae-teresae* and *D. racemosa*. In *D. gemmiflora* the inflorescence is lax and racemiform but differs from the preceding group of species in that the flowers lack a noticeable pedicel.

Flower: The flower is dioecious by abortion, regular, tetramerous, perigynous and pedicellate or sessile. It is relatively small and quite inconspicuous in most species but attains a length of about 10 mm. in *D. flavida* and *D. macrocarpa*.

The perianth is always connate into a pronounced tube. There is some dispute as to the presence of a true corolla so that it is difficult to determine what nomenclature should be applied to the tube. I prefer to use the term calyx tube until the nature of the thymelaeaceous flower is more fully understood. The interior of the tube is always glabrous within subgenus DAPHNOPSIS but may be either glabrous or variously pubescent within subgenus NEIVIRA.

The nature of the internal appendages of the tube has been in dispute almost since the foundation of the family. They have been called petals, petaloid glands,

aborted stamens, "effigurations", "enations", "squamellae" and stipules. A concise review of this terminology can be found in an extremely important paper on the floral morphology of the Thymelaeaceae by Katherine Heinig.⁶

In essence, Heinig found that the structures, when isomerous, were enervated by a pair of traces and not a single median trace as customarily would be expected in true petals. Furthermore, in the simplest case, the pair of traces arises one each from the lateral traces of the adjacent calyx lobes. In the case of true petals the median trace would be expected to depart from the commissural traces of the calyx tube. Heinig believes that it is possible to interpret these structures as petals if the petals were considered as much reduced with the midrib lacking, or, if one believes that for some reason the petal midrib failed to depart from the commissural calyx tube traces until after that trace dichotomized to continue, as the calyx lobe laterals. In lieu of this explanation she prefers to interpret the structures as being stipular, her anatomical reasons being obvious.

If we assume that Heinig's interpretation is correct, then the most primitive type is that in which the number of structures is double the number of calyx lobes. From this type it is easy to show progressive cohesion between the lateral margins of the stipules of the adjacent calyx lobes to form structures very similar to the intrapetiolar stipules of the Rubiaceae. This type, in which the structures are isomerous with the calyx lobes, is critical, since those who interpret them as true petals believe the double type to have been formed by progressive apical bifurcation. The only species of *Daphnopsis* with four petals which are large enough to contain vasculature is *D. calcicola*. The petals of this species are reminiscent of those of some species of Combretaceae. From the isomerous type further connation could result in the formation of a faucal annulus, tube or collar. In one species, *D. occidentalis*, the annulus is lobed, the lobes digitiform, alternisepalous and four in number, suggesting origin from the isomerous free type. The final condition is one in which the calyx tube is devoid of any internal appendages. The latter could be derived from any or all of the previous types.

Heinig has pointed out the similarities between the Thymelaeaceae and the case of the floral stipules demonstrated by Woodson and Moore⁷ in the Apocynaceae. I am not convinced that these are comparable cases, because: in the Apocynaceae a true corolla occurs which renders the morphology much clearer; in the Apocynaceae the stipules are borne at the base of the calyx tube whereas in the Thymelaeaceae they are borne near the calyx tube orifice; finally, in the Apocynaceae the floral stipules are morphologically similar to the vegetative stipules whereas in the Thymelaeaceae stipules are unknown (Heinig believes that this may indicate an evolutionary lag between the vegetative and reproductive structures).

The term petal is used for the internal calyx appendages throughout this revision. Whether or not these structures are stipular in origin is of little consequence. Petals are known to be of heterogeneous origin (i.e. foliar and andro-

⁶ Heinig, K. Studies In The Floral Morphology Of The Thymelaeaceae, Am. Jour. Bot. 38:113-132. 1951.

⁷ Woodson, R. E. Jr., & J. Moore, The vascular anatomy and comparative morphology of apocynaceous flowers. Bull. Torrey Bot. Club 65:135-164. 1938.

ecial) and derivation from stipules remains a possibility. Finally, since the internal calyx structures occupy the same position that petals would be expected to occupy, there seems to be sufficient reason to call them such.

The distribution of petal types in the genus is as follows: subgenus DAPHNOPSIS; petals eight—7 species, petals four—5 species; petals connate into a faucal annulus—10 species, petals absent—12 species; subgenus NEIVIRA; petals connate into a faucal annulus—10 species, petals absent—2 species. Therefore, in subgenus DAPHNOPSIS four petal types are present but in subgenus NEIVIRA only two are found. I believe that this indicates the latter subgenus to be the more specialized.

The antisepalous or outer whorl of stamens gives evidence, by position, that an intervening whorl has been either reduced or lost. Further, in those species having the petals connate into a faucal annulus, the annulus is always above, or outside, both whorls of stamens. This is true even when the antisepalous stamens are inserted on the calyx lobes. The alternisepalous stamens, or inner whorl, are generally inserted somewhat below the antisepalous but appear similar in all other respects. In those species having eight or four petals the alternisepalous stamens are always inserted below the petals which again gives evidence of a lost or reduced whorl.

The pistillate flower may bear reduced androecial parts in the form of staminodia. If staminodia are present, there may be either eight or four and are represented by small papilliform projections near the calyx tube orifice. Six species, some in both subgenera, lack staminodia altogether.

Rarely, as in some plants of *D. americana*, the flowers appear to be functionally bisexual. They bear poorly developed anthers which contain small amounts of pollen; some flowers also set fruit. I have been unable to test either the pollen or fruit for viability.

Domke⁸ has reported some functionally masculine plants with flowers in which the ovary contained a relatively well-formed seed. Unfortunately his notes and specimens were destroyed in 1942 and I have been unable to corroborate his observations. Perhaps he was referring to the same phenomenon that I have described in the preceding paragraph.

A recognizable hypogynous disc is found in most species of the genus. The origin of this disc possibly is androecial although there is no irrefutable evidence to demonstrate this. Heinig⁹ reports that the disc is vascularized by strands from the radial face of the floral tube bundles or occasionally from the staminal bundles. Some investigators have observed that the disc is generally four-lobate and therefore may represent an inner whorl of aborted stamens. I have found the number, size and position of the disc lobes to be extremely variable and therefore of little value in determining origin. However, I have found in occasional flowers of *D. racemosa* a small portion of the disc displaced from its usual hypogynous position to a point about midway in the calyx tube. I am not certain of the significance of this.

I have assumed the lobate disc to be less advanced than the annular or cupuli-

⁸ Domke, W. op. cit. 1934 and personal correspondence.

⁹ Heinig, K. op. cit. 1951.



Fig. 4. Distribution of the Genus and the Subgenera

form types. In addition, I have interpreted the discs which are variously adnate to be more advanced than the free type. In subgenus *DAPHNOPSIS* the disc ranges from lobate to cupuliform and free to completely adnate. In subgenus *NEIVIRA* the disc is lobate to cupuliform and always free.

The gynoecium is composed of a single pistil which is of the pseudomonomeric type: the ovary is bicarpellate, one carpel is fertile and the other sterile. The

fertile carpel bears a single pendant ovule on a parietal placenta. The style is terminal, a condition which I consider to be less advanced than a lateral position. The lateral position of the style is obtained by the failure of the sterile carpel to expand.

GEOGRAPHY

The genus is strictly of the New World and is found in Central America, the Antilles and South America. The habitats of the species are quite varied, i.e., from cloud forests to xeric serpentine flats, but the requirements for individual species appear to be rather specific. The plants can be found from sea level to somewhat above 3000 meters and from 24° north latitude to 36° south latitude.

The distribution of the genus and the subgenera is shown in Figure 4. This study has increased the known range of the genus beyond those noted by Domke¹⁰ in 1934, particularly in Central America. This extension is based on various collections made in more recent years. I expect further extension of the range as more collections from South America become available, especially from the eastern slopes of the Andes.

A composite distribution map of the species (Figure 5), although unsatisfactory in many respects, shows several centers about which species tend to be arranged. Subgenus DAPHNOPSIS has two such centers, one in Guatemala and the other in the Greater Antilles. The two appear to be related, a relationship which could have been established sometime between Cretaceous and Miocene when a functional land bridge existed between these two areas. The Antillean center has its greatest development in Cuba where six endemic species are found. The species of this subgenus which has the most extended range is *D. americana*. It occupies roughly an area which approximates the range of the main body of the subgenus.

The species of subgenus NEIVIRA cluster about Rio de Janeiro. The species of this subgenus are generally more restricted than those of subgenus DAPHNOPSIS. *Daphnopsis racemosa*, parallel with *D. americana*, approximates in its range that of the subgenus.

Several important disjunctions occur in *D. americana*, *D. cuneata* and *D. racemosa*, all of which are discussed under those species.

USES

The genus is of no economic importance so far as I am aware. The fruits are occasionally used as purgatives in some parts of South America. In the Antilles and Central America the fibrous bark is often used as twine or rope.

SPECIAL PROBLEMS AND MATERIALS

Special Problems: The keys to the species of *Daphnopsis* are based primarily on floral morphology. For determining the internal floral characters required by the

¹⁰ Domke, W. op. cit. 1934.

keys, the use of a high-powered dissecting microscope and good illumination is absolutely essential. In most instances the user will profit by examining more than one flower. The species are not all known from both staminate and pistillate material; in fact, six are unknown in staminate material and fourteen are unknown in pistillate material. In addition to this difficulty, seven species are known only



Fig. 5. Composite Distribution Map of the Species of *Daphnopsis*

from a single collection and therefore the keys and descriptions encompass only several specimens at best. The user will discover some necessary omissions and will perhaps find them somewhat disconcerting (but no less so than to the author!). As new material becomes available great care must be taken to match it with existing species which are imperfectly known before new species are described. The distribution of each species is included in the key for the convenience of the user.

The key to subgenus *DAPHNOPSIS* is based upon petal type. Therefore, I do not regard the key as natural but as indicating four levels of development as characterized by the petals. The species of any level may or may not be related.

In the key to subgenus *NEIVIRA* I have abandoned the use of petal type as a primary character. If the calyx tube is villous within, the presence or absence of petals is extremely difficult to determine, so that the character is no longer practical.

Each species is represented by an illustration which includes the range as determined by the specimens examined and a sketch of the staminate and pistillate flowers. The background of each figure is one of Goode's Series of Base Maps or portions thereof supplied by the University of Chicago Press. The symbols represent approximate localities where specimens were collected and do not in any way reflect the relative abundance of the species; any symbol may represent from one to many collections. The drawings of the flowers have been made to the same scale throughout, about $\times 9$ natural size. They are semi-diagrammatic in order to clarify certain internal morphologic characters and to expedite the use of the keys.

Karl Daniel Friedrich Meissner (1800–1874): In the course of compiling species and synonym citations I became involved in a rather curious problem in orthography. Since my first realization of this problem I have found the confusion to be so widespread that a short note about it may not be out of order.

The problem involves the orthography of the name of one of the most active workers in the genus, Karl Daniel Friedrich Meisner (or Meissner). His name, as author, appears with both spellings in about equal numbers. Annotations of herbarium specimens in his handwriting are generally Msn.—an unfortunate state of affairs for one interested in orthography! These specimens are now in the possession of the New York Botanical Garden and are stamped "Meisner Herbarium". According to the Barnhart Biographical Index of Botanists, which is also owned by the New York Botanical Garden, ". . . his father spelled the name Meisner and so did the son in his youth." In addition, an article in the *Journal of Botany* (12:191. 1874) begins, "Karl Friedrich Meisner, or, as he recently spelt his name, Meissner . . ." Furthermore, in an obituary by Asa Gray,¹¹ the question of orthography is raised and he says, "In the family circular announcing his decease it is Meissner." Finally, I have obtained a copy of his death certificate from Basel and the spelling is Meissner.

An excellent biographical sketch by Alphonse de Candolle¹² reveals the under-

¹¹ Gray, A. in *Bull. Torrey Bot. Club* 5:25. 1874.

¹² de Candolle, A. *Notice Biographique Sur Charles-Frederic Meissner* in *Bull. Soc. Bot. Fr.* 21: 279–283. 1874.

lying reason for the change in orthography. The son, with whom we are concerned, was apparently afraid that he might be confused with his illustrious father and wishing to avoid confusion chose to spell his name Meissner. In retrospect, there was little basis for his fear, as his father's works were confined to zoology and geography, fields in which the son never published. In attempting to avoid confusion he actually created it! I am using the spelling Meissner.

Materials: This revision is based on specimens from the following herbaria. The abbreviations for them are taken from Lanjouw & Stafleu's 'Index Herbariorum' part I (Regnum Vegetabile, vol. 15, 4th ed., 1959).

A	—Arnold Arboretum, Harvard University, Cambridge
B	—Botanisches Museum, Berlin-Dahlem
BM	—British Museum, London
C	—Botanical Museum and Herbarium, Copenhagen
F	—Chicago Natural History Museum, Chicago
GH	—Gray Herbarium of Harvard University, Cambridge
IAN	—Instituto Agronómico do Norte, Belém
IPA	—Instituto de Pesquisas Agronômicas, Dois Irmãos, Recife
K	—Herbarium Royal Botanic Gardens, Kew
LS	—"Herbario de la Salle", Colegio de la Salle, Habana
M	—Botanische Staatssammlung, München
MA	—Instituto "Antonio José Cavanilles", Madrid
MICH	—University Herbarium, University of Michigan, Ann Arbor
MO	—Missouri Botanical Garden, St. Louis
NY	—The New York Botanical Garden, New York
P	—Muséum National d'Histoire Naturelle, Paris
PACA	—Herbarium Anchieta, Colegio Anchieta, Porto Alegre
R	—Divisão de Botânica do Museu Nacional, Rio de Janeiro*
RB	—Jardim Botânico, Rio de Janeiro
S	—Botanical Department, Naturhistoriska Riksmuseum, Stockholm
U	—Botanical Museum and Herbarium, Utrecht
US	—U. S. National Museum, Smithsonian Institution, Washington
W	—Naturhistorisches Museum, Wien

I wish to take this opportunity to thank the curators and the directors of the above herbaria for the many courtesies extended to me. I wish to thank, particularly, Bro. Alain F.S.C. of Colegio de la Salle, the Rev. B. Rambo S.J. of Colegio Anchieta and H. Moreira Filho of the Instituto de História Natural, Curitiba, for their gracious gifts of duplicate specimens to the Missouri Botanical Garden.

In addition to the usual method of citing the specimen and the institution to which it belongs I have also cited the sex of each specimen. The citation for each collection is opened and closed with brackets; within the brackets the applicable herbarium abbreviations are used in alphabetical order; following each herbarium abbreviation is the notation of the sex of that specimen, which is enclosed by a set of parentheses. When all examined specimens of a collection are of the same sex, the symbol precedes the herbarium abbreviations, and is not repeated. The sex citation is abbreviated in four categories (δ) for staminate; (♀) for pistillate; (s) for sterile; and (?) for specimens in which the flowers are too immature to diagnose or in which the old inflorescences are present but lack flowers or fruit.

* Specimens received too late for the information to be incorporated into the figures.

TAXONOMY

DAPHNOPSIS Mart. & Zucc. Nov. Gen. & Sp. 1:65. 1824. [T.: *D. brasiliensis* Mart. & Zucc.]

Bosca Velloso, Flor. Flumin. 142, 1881; Icon 4, t. 11. 1827. [T.: *B. stupacea* Velloso]

Gastrilia Raf. Flor. Telluriana 4:105. 1836. [T.: *G. umbellata* Raf. based on *Daphne occidentalis* Sw.]

Nordmannia Fisch. & C. A. Mey. in Bull. Acad. St. Petersburg 1:355. 1843; Ann. Sci. Nat. ser. II. 20:49. 1843. [T.: *N. tinifolia* (Sw.) Fisch. & C. A. Mey.]

Hargasseria Schiede & Deppe, ex C. A. Mey. in Bull. Acad. St. Petersburg 1:356. 1843; Ann. Sci. Nat. ser. II. 20:51. 1843. [T.: *H. mexicana* Schiede & Deppe, ex C. A. Mey. based on *Daphne bonplandiana* Cham. & Schlecht. not HBK.]

Coleophora Miers, in Ann. Nat. Hist. ser. II. 7:196. 1851. [T.: *C. gemmiflora* Miers]

Hyptiodaphne Urb. Symb. Ant. 2:453. 1901. [T.: *H. crassifolia* (Poir.) Urb.]

Shrubs or trees, usually with soft wood and leathery flexible branches, the stems unequally dichotomous or monopodial, the bark more or less longitudinally rugose after drying. Leaves spiral or approximately whorled by irregular condensation, simple, pinnately veined, estipulate. Inflorescences borne from the younger leafy or bracteate stems or on axillary brachyblasts from the younger or older defoliated nodes and sometimes becoming fasciculate there, umbelliform, racemiform or rarely the flowers solitary. Flowers dioecious, tetramerous, perigynous; calyx tube obconic to urceolate or campanulate, more or less inconspicuously ribbed, generally greenish-yellow, often densely hairy without; calyx lobes subequal or unequal, imbricate, the outer ovate-trigonal, often bearing a small exterior median horn below the apex, slightly cucullate becoming reflexed and everted at anthesis, the inner ovate-suborbicular, plane; petals minute, 8, 4, connate into an obscure faucal annulus or absent, generally papilliform or squamelliform, inserted on the calyx tube in the alternisepalous position; disc of free lobes or annular to cupuliform or tubular and free to adnate, with entire to variously lobed margins, sometimes absent. Staminate flowers: stamens 8, in two whorls inserted at two levels, the upper antisepalous, the lower alternisepalous, the anthers sessile, subsessile or filamented, basifixed, longitudinally dehiscent, introrse; pistillode lageniform to tenpin-shaped. Pistillate flowers: generally somewhat smaller than the staminate; staminodia 8, 4 or absent, generally papilliform; pistil 1, pseudomonomeric, superior, borne on a short to long gynophore, containing a single pendulous ovule upon the parietal placenta, the style terminal, the stigma capitate, sometimes obscurely bilobed. Fruit a small drupe; seed exalbuminous or nearly so, the embryo minute, the cotyledons thick, convex; calyx tube partially or completely persistent at the base.

KEY TO THE SUBGENERA

- a. Branching truly or falsely dichotomous, the false dichotomies (result of terminal flowering or injury) with persistent or deciduous cataphylls at their bases; inflorescences extra-axillary from the young leafy or bracteate stems or on axillary brachyblasts, umbelliform, racemiform or rarely the flowers solitary and pedunculate; calyx tube glabrous within; petals 8, 4, connate into an obscure faucal annulus or absent; disc of discrete lobes, annular, cupuliform, tubular, or absent, free to adnate.....I. DAPHNOPSIS (p. 272)
- aa. Branching monopodial or falsely dichotomous, the false dichotomies (result of injury) with persistent or deciduous cataphylls at their bases; inflorescences borne from axillary brachyblasts at the young leafy to old defoliated nodes and often becoming fasciculate there, dense to lax racemiform or rarely the flowers solitary and sessile; calyx tube glabrous to villous within; petals connate into an obscure faucal annulus or absent; disc of discrete lobes, annular to cupuliform, free.....II. NEIVIRA (p. 333)

SUBGENUS I. DAPHNOPSIS

Section *Nordmannia* Benth. & Hook. Gen. Pl. 3:191. 1883.

KEY TO THE SPECIES

- a. Staminate flowers with petals, the disc of lobes (and free), annular (and free or basally adnate) or cupuliform (and free or basally adnate); pistillate flowers with petals, the staminodia 8, 4 or 0, the disc of lobes (and free) or annular (and free to completely adnate).
- b. Staminate flowers with 8 or 4 free petals, the disc of lobes (and free) or annular (and free or basally adnate); pistillate flowers with 8 or 4 free petals, the staminodia 8 or 0, the disc of lobes (and free) or annular (and basally to completely adnate).
- c. Staminate flowers with 8 free petals, the disc of lobes (and free) or annular (and free or basally adnate); pistillate flowers with 8 free petals, the staminodia 8, the disc of lobes (and free) or annular (and basally to completely adnate), the stigma exerted.
- d. Leaf apex obtuse, acute or attenuate-acuminate; calyx lobes indefinitely papillate or puberulent within; staminate flowers with the disc of lobes (and free) or annular (and free or basally adnate); pistillate flowers with the disc of lobes (and free) or annular (and basally adnate).
- e. Calyx lobes indefinitely papillate or puberulent within; staminate flowers with the anthers sessile or subsessile, included or only the antisepalous exerted, the pistillode glabrous or minutely pilose at the apex; pistillate flowers with the ovary glabrous or minutely pilose, the stigma capitate.
- f. Calyx lobes indefinitely papillate within; staminate flowers with the anthers sessile, the disc of lobes (and free) or annular (and free); pistillate flowers with the disc of lobes (and free) or annular (and basally adnate), irregularly lobed or undulate to entire.
- g. Primary lateral veins of the leaves almost parallel with the costa; staminate flowers with the disc of lobes (and free), the pistillode minutely pilose at the apex; pistillate flowers with the disc of lobes (and free), the ovary minutely pilose at the apex. Plants of Hispaniola.....1. *D. HISPANIOLICA*
- gg. Primary lateral veins of the leaves forming an angle of at least 30 degrees with the costa; staminate flowers with the disc of lobes (and free) or annular (and free), the pistillode glabrous; pistillate flowers with the disc annular (and basally adnate), the ovary glabrous.
- h. Staminate flowers with the calyx tube narrowly obconic to tubular, 6-7 mm. long, the disc of several lobes (and free), the pedicel 2.5-3.5 mm. long; pistillate flowers not seen. Plants of Colombia.....2. *D. PURDIEI*
- hh. Staminate flowers with the calyx tube campanulate to obconic, 2.0-5.5 mm. long, the disc annular (and free), irregularly and deeply lobed, the pedicel 0.5-1.0 mm. long; pistillate flowers with the calyx tube campanulate to nearly urceolate, 2-3 mm. long, the disc annular (and basally adnate), irregularly lobed or undulate to entire.
- i. Staminate flowers less than 30 per inflorescence, the calyx tube campanulate, 2.0-3.5 mm. long, the pistillode lageniform; pistillate flowers with the disc irregularly lobed. Plants of Colombia and Venezuela.....3. *D. CARACASANA*
- ii. Staminate flowers 35-55 per inflorescence, the calyx tube narrowly obconic, 4.5-5.5 mm. long, the pistillode tenpin-shaped; pistillate flowers with the disc undulate to entire. Plants of Ecuador.....4. *D. MACROPHYLLA*
- ff. Calyx lobes puberulent within; staminate flowers with the anthers sessile or subsessile, the disc annular (and basally adnate); pistillate flowers not seen. Plants of Mexico.....5. *D. PURPUSII*
- ee. Calyx lobes puberulent within; staminate flowers with the anthers long-filamented, both whorls exerted, the pistillode setose; pistillate flowers with the ovary setose, the stigma minutely capitate. Plants of Mexico.....6. *D. MOLLIS*
- dd. Leaf apex acuminate; calyx lobes puberulent within; staminate flowers not seen; pistillate flowers with the disc annular (and completely adnate). Plants of Mexico.....7. *D. PERPLEXA*
- cc. Staminate flowers with 4 free petals, the disc of lobes (and free); pistillate flowers with 4 free petals, the staminodia 8 or 0, the disc of lobes (and free) or annular (and free), the stigma exerted or included.

- j. Leaves darker above than below, with the primary lateral veins forming an angle of at least 30 degrees with the costa; calyx lobes indefinitely papillate within; pistillate flowers with 8 staminodia.
- k. Staminate flowers with the disc of lobes (and free), the pistillode glabrous, the pedicel about 0.5 mm. long; pistillate flowers not seen.
- l. Staminate flowers with the calyx tube 3.0–3.5 mm. long, the petals digitiform, longer than broad, the disc short-lobate, the anthers 0.5–0.75 mm. long. Plants of Guatemala.....8. *D. MONOCEPHALA*
- ll. Staminate flowers with the calyx tube 5–6 mm. long, the petals squammelliform, about as long as broad, the disc lobes almost as tall as the pistillode, the anthers about 1.5 mm. long. Plants of Puerto Rico.....9. *D. HELLERIANA*
- kk. Staminate flowers not seen; pistillate flowers with the disc annular (and free), the ovary pilose toward the apex, the pedicel about 4.5 mm. long. Plants of Ecuador.....10. *D. EQUATORIALIS*
- jj. Leaves essentially the same color above and below, the primary lateral veins almost parallel with the costa; calyx lobes puberulent within; pistillate flowers with 8 or 0 staminodia.
- m. Staminate flowers with the petals papilliform, less than 0.25 mm. long, glabrous, the pistillode minutely setose; pistillate flowers with the petals papilliform, less than 0.25 mm. long, glabrous, the ovary minutely setose, the staminodia 8. Plants of central Cuba.....11. *D. OBLONGIFOLIA*
- mm. Staminate flowers not seen; pistillate flowers with the petals obovate, about 0.75 mm. long, tomentose, the ovary minutely setose, the staminodia 0. Plants of western Cuba.....12. *D. CALCICOLA*
- bb. Staminate flowers with the petals connate into an obscure faucal annulus, with or without 4 prominent alternisepalous lobes, the disc of lobes (and free), annular (and free or basally adnate) or cupuliform (and free or basally adnate); pistillate flowers with the petals connate into an obscure faucal annulus, with or without 4 prominent alternisepalous lobes, the staminodia 8, 4, or 0, the disc of lobes (and free), annular (and free to completely adnate) or cupuliform (and basally adnate).
- n. Calyx lobes indefinitely papillate within; faucal annulus with 4 prominent alternisepalous lobes. Plants of Jamaica.....13. *D. OCCIDENTALIS*
- nn. Calyx lobes indefinitely papillate or puberulent within; faucal annulus without 4 prominent alternisepalous lobes.
- o. Staminate flowers with the disc of lobes (and free) or cupuliform (and free), irregularly lobed, the pistillode minutely setose; pistillate flowers with the disc of lobes (and free) or annular (and basally adnate), the staminodia 4 or 8.
- p. Staminate flowers 4–8 per inflorescence, the anthers oblong, the disc of lobes (and free), the pistillode tenpin-shaped, the pedicel obsolete; pistillate flowers with the disc of lobes (and free), the staminodia 4, the pedicel about 1 mm. long. Plants of Mexico.....14. *D. LIEBMANNII*
- pp. Staminate flowers 2–55 per inflorescence, the anthers suborbicular, the disc cupuliform (and free), the pistillode lageniform, the pedicel 3–4 mm. long; pistillate flowers with the disc annular (and basally adnate), the staminodia 8, the pedicel 3–5 mm. long. Plants of Mexico.....15. *D. MEXIAE*
- oo. Staminate flowers with the disc of lobes (and free), annular (and free to completely adnate) or cupuliform (and basally adnate), irregularly lobed, undulate or entire, the pistillode glabrous; pistillate flowers with the disc of lobes (and free), annular (and free to completely adnate) or cupuliform (and basally adnate), the staminodia 0 or 8.
- q. Calyx lobes indefinitely papillate within; staminate flowers with the disc of lobes (and free), annular (and free to basally adnate) or cupuliform (and basally adnate); pistillate flowers with the disc of 4 lobes (free), annular (and free) or cupuliform (and basally adnate).
- r. Leaves alternate; staminate flowers puberulent without, the disc annular (and free); pistillate flowers puberulent without, the disc annular (and free). Plants of Cuba.....16. *D. GUACACOA*
- rr. Leaves approximately whorled; staminate flowers sericeous or hirsute without, the disc of irregular lobes (and free) or cupuliform (and basally adnate); pistillate flowers sericeous or hirsute without, the disc of 4 lobes (and free) or cupuliform (and basally adnate).
- s. Staminate flowers with the calyx tube 9–10 mm. long, hirsute without, the disc of irregular lobes (and free); pistillate flowers with the calyx tube tubular, about 6.5 mm. long, hirsute without, the disc of 4 lobes (and free), the stigma included. Plants of Hispaniola.....17. *D. CRASSIFOLIA*

- ss. Staminate flowers with the calyx tube 3.5–6.5 mm. long, sericeous without, the disc cupuliform (and basally adnate); pistillate flowers with the calyx tube suburceolate, about 3.5 mm. long, sericeous without, the disc cupuliform (and basally adnate), the stigma exserted. Plants of Puerto Rico.....18. *D. PHILIPPIANA*
- qq. Calyx lobes puberulent within; staminate flowers with the disc annular (and basally to completely adnate) or cupuliform (and basally adnate); pistillate flowers with the disc annular (and free to completely adnate).
- t. Staminate flowers with the antisepalous stamens subexserted, the alternisepalous included, the disc annular (and free), the pistillode glabrous; pistillate flowers with the disc annular (and free), the stigma exserted.
- u. Staminate flowers 15–50 per inflorescence, the calyx tube subcampanulate to campanulate, tomentose without, the pistillode bottle-shaped; pistillate flowers 2–5 per inflorescence, the calyx tube campanulate, tomentose without. Plants of Brasil.....19. *D. BRASILIENSIS*
- uu. Staminate flowers 2–4 per inflorescence, the calyx tube obconic, puberulent without, the pistillode tenpin-shaped; pistillate flowers not seen. Plants of Cuba.....20. *D. ANGUSTIFOLIA*
- tt. Staminate flowers with the antisepalous stamens subexserted to exserted, the alternisepalous included to subexserted, the disc annular (and basally to completely adnate) or cupuliform (and basally adnate), the pistillode glabrous or minutely setose at the apex; pistillate flowers with the disc annular (and basally to completely adnate) or cupuliform (and basally to completely adnate), the stigma exserted or included.
- v. Staminate flowers with the alternisepalous stamens included, the disc annular (and basally adnate), entire, the pistillode glabrous; pistillate flowers with the disc annular (and completely adnate), the staminodia 0, the stigma exserted; inflorescences always simple. Plants of Cuba and Hispaniola.....21. *D. CUNEATA*
- vv. Staminate flowers with the alternisepalous stamens included to subexserted, the disc annular to cupuliform (and basally to completely adnate), irregularly short-lobed, the pistillode glabrous or minutely setose at the apex; pistillate flowers with the disc annular to cupuliform (and basally to completely adnate), the staminodia 8, often with poorly developed anthers, the stigma exserted or included; inflorescences simple or more often 2–8 times dichotomous. Plants of Central America, Antilles, northern and northwestern South America.....22. *D. AMERICANA*
- aa. Staminate flowers lacking petals, the disc annular (and free to completely adnate) or cupuliform to tubular (and free); pistillate flowers lacking petals, the staminodia 8, the disc annular (and free or completely adnate).
- w. Staminate flowers with the disc annular (and free) or cupuliform to tubular (and free); pistillate flowers with the disc annular (and free).
- x. The disc regularly or irregularly but conspicuously lobed (some of the lobes to $\frac{1}{3}$ the height of the disc), the staminate cupuliform (and free), the pistillate annular (and free).
- y. Calyx lobes indefinitely papillate within; staminate flowers with the disc regularly 4-lobed, the pistillode glabrous, the pedicel about 5 mm. long; pistillate flowers not seen. Plants of Mexico.....23. *D. FLAVIDA*
- yy. Calyx lobes indefinitely papillate or puberulent within; staminate flowers with the disc irregularly lobed, the pistillode hirtellous, the pedicel 0.5–1.0 mm. long; pistillate flowers with the disc annular (and free) and irregularly lobed.
- z. Staminate flowers with the calyx tube tubular, about 10.5 mm. long, the calyx lobes puberulent within, the pistillode hirtellous; pistillate flowers not seen; drupe ellipsoid, to 3 cm. long, 1 cm. in diameter. Plants of Santa Lucia...24. *D. MACROCARPA*
- zz. Staminate flowers not seen; pistillate flowers with the calyx tube urceolate, 2.0–2.5 mm. long, the calyx lobes indefinitely papillate within, the ovary glabrous; drupe not seen. Plants of Cuba.....25. *D. ALAINII*
- xx. The discs undulate to entire, the staminate annular (and free to completely adnate), cupuliform (and free) or tubular (and free), the pistillate annular (and free).
- A. Calyx lobes indefinitely papillate within; staminate flowers with the disc nearly as long as the pistillode, the pistillode glabrous; pistillate flowers not seen. Plants of Peru.....26. *D. PAVONII*
- AA. Calyx lobes indefinitely papillate or puberulent within; staminate flowers with the disc much shorter than the pistillode, the pistillode glabrous or setose; pistillate flowers with the disc annular (and free), the ovary glabrous or setose.

- B. Leaves narrowly elliptic; calyx lobes puberulent within; staminate flowers with the calyx tube narrowly campanulate, about 2 mm. long, the disc annular (and free), entire, the pistillode glabrous; pistillate flowers not seen. Plants of Brasil.....27. *D. PSEUDOSALIX*
- BB. Leaves elliptic to broadly elliptic or oblanceolate; calyx lobes puberulent or glabrous within; staminate flowers with the calyx tube campanulate to tubular, 5–8 mm. long, the disc cupuliform (and free) or tubular (and free), undulate, the pistillode setose. Pistillate flowers with the disc annular (and free).
- C. Leaves elliptic to oblanceolate; calyx lobes minutely puberulent within; staminate flowers with the calyx tube obconic, 5–6 mm. long, the disc cupuliform (and free); pistillate flowers with the pistil lageniform, the ovary setose. Plants of Colombia.....28. *D. ANOMALA*
- CC. Leaves elliptic; calyx lobes glabrous within; staminate flowers with the calyx tube campanulate to tubular, 6–8 mm. long, the disc cupuliform (and free) or tubular (and free); pistillate flowers with the pistil tenpin-shaped, the ovary setose or glabrous.
- D. Staminate flowers with the disc tubular (and free), about 1.5 mm. tall, irregularly undulate, the pistillode borne on a gynophore about 1 mm. long; pistillate flowers with the disc annular (and free), the ovary glabrous; drupe glabrous. Plants of Guatemala.....29. *D. RADIATA*
- DD. Staminate flowers with the disc cupuliform (and free), about 0.5 mm. tall, more or less undulate, the pistillode sessile or essentially so; pistillate flowers with the disc annular (and free), the ovary setose; drupe minutely setose at the apex.
- E. Inflorescences borne terminally on the young leafy stems; staminate inflorescence with the primary peduncle 0.5–1.0 mm. long, the secondary peduncles about 0.5 mm. long; pistillate inflorescence with the primary peduncle about 7 mm. long; staminate flowers with the calyx tube 6–8 mm. long, the pedicel 0.5–2.0 mm. long; pistillate flowers not seen. Plants of Guatemala.....30. *D. TUERCKHEIMIANA*
- EE. Inflorescences borne terminally on the young leafy stems or sometimes on axillary brachyblasts; staminate inflorescence with the primary peduncle about 10 mm. long, the secondary peduncles 1–5 mm. long; pistillate inflorescence with the primary peduncle 10–50 mm. long; staminate flowers with the calyx tube 6.0–6.5 mm. long, the pedicel about 0.5 mm. long; pistillate flowers with the disc annular (and free), the ovary setose; drupe minutely setose at least at the apex. Plants of Guatemala and El Salvador.....31. *D. SELERORUM*
- WW. Staminate flowers with the disc annular (and basally to completely adnate); pistillate flowers with the disc annular (and completely adnate).
- F. Staminate flowers with the disc annular (and basally adnate), the anthers filamented, both whorls exerted, the pistillode setose; pistillate flowers not seen. Plants of Mexico.....32. *D. BREVIFOLIA*
- FF. Staminate flowers with the disc annular (and basally or completely adnate), the anthers sessile, the antisepalous subexserted to exerted, the alternisepalous included, the pistillode glabrous; pistillate flowers with the disc annular (and completely adnate), the ovary glabrous.
- G. Young branches minutely black-punctate; staminate inflorescence with the secondary peduncles to 1 mm. long; staminate flowers with the calyx lobes indefinitely papillate within, the pedicel about 1.5 mm. long; pistillate flowers not seen. Plants of Cuba.....33. *D. PUNCTULATA*
- GG. Young branches minutely puberulent; staminate inflorescence with the secondary peduncles 2–12 mm. long; staminate flowers with the calyx lobes puberulent within, the pedicel obsolete; pistillate inflorescence with the secondary peduncle 2–6 mm. long; pistillate flowers with the calyx lobes puberulent within, the pedicel about 0.5 mm. long. Plants of Mexico and Guatemala.....34. *D. FICINA*

1. *DAPHNOPSIS hispaniolica* Nevl. spec. nov.

Frutices vel arbores parvi; ramis juvenibus pubescentibus usque glabrescentibus. Folia lineari-oblonga usque oblonga vel oblongo-elliptica 1–11 cm. longa 0.3–1.25 cm. lata apice acuta usque mucronulata basi cuneata coriacea glabra, venis primariis

lateralibus paene costa parallelis; petiolo 1–5 mm. longo. Inflorescentia mascula umbelliformis; pedunculo primario 2–3 (–15) mm. longo; rhachide ca. 0.5 mm. longo; pedunculis secundariis ca. 1 mm. longis. Flores masculi 2–4 (–7) per inflorescentia; pedicello 1 mm. longo; calyce obconico 2–4 mm. longo 1.5 mm. lato extus pubescente intus glabro; calycis lobis subequalibus intus glabris 1.5 mm. longis 1.25–1.5 mm. latis; petalis 8 papilliformibus; staminibus in planis 2, antheris oblongis 0.5–0.75 mm. longis 0.5 mm. latis sessilibus; disco humili lobato libero glabro; pistillodio lageniformi 0.5–0.75 mm. longo pubescente. Inflorescentia feminea umbelliformis; pedunculo primario 1.0–1.5 mm. longo; rhachide ca. 0.5 mm. longo; pedunculis secundariis ca. 0.5 mm. longis. Flores feminei 2–6 per inflorescentia; pedicello 1–2 mm. longo; calyce campanulato 1 mm. longo 0.5–0.75 mm. lato extus pubescente intus glabro; calycis lobis subequalibus intus glabris 0.75–1.0 mm. longis 0.5–0.75 mm. latis; petalis 8 papilliformibus; staminodiis 8 papilliformibus; disco humili lobato libero glabro; pistillo 2 mm. longo ovario ovato superne minute piloso stigmatate capitato exserto. Fructus ellipticus 1.0–2.4 cm. longus 5–8 mm. latus. HOLOTYPUS: *Ekman H4947 (A)*.

Found on limestone bluffs from 400 to 900 meters. Flowers from February to September.



Fig. 6. *Daphnopsis hispaniolica*

DOMINICAN REPUBLIC: AZUA: Sierra de Ocoa, San José de Ocoa, Loma Miguel-Martin, Subida de las Canas, *Ekman H11957 [(♀) S, US]*.

HAITI: ARTIBONITE: Ennery, *Ekman H2451* [S (s)]; hills w. of Glorè, on Étang Laumâtre, *Ekman H1063* [(♂) S. US]. QUEST: Massif de la Selle, Morne Dumaisin, *Ekman H3071* [S (?)]. NORD: Gros-Morne, Morne Bonsjère, *Ekman H4947* [(♂) A, NY, S, US], *H4957* [(♀) S, US].

This new species has the same general appearance as *D. oblongifolia* and has been mistaken for it. The internal floral structure clearly shows that these two species are not related.

2. *DAPHNOPSIS PURDIEI* Meissn. in DC. Prod. 14:522. 1857. [T.: *Purdie s. n.* (♂)!]

Trees, the young branches ochraceous-tomentose and glabrescent. Leaf blades oblanceolate to elliptic, 5–14 cm. long, 1.5–4.5 cm. broad, acute at the apex, attenuate-cuneate at the base, subcoriaceous, tomentose or glabrescent above, appressed-tomentose below, the costa immersed above, emersed below, the primary lateral veins prominulous above, prominent below, arcuate-ascending; petiole 4–8 mm. long. Inflorescences borne from the young leafy or bracteate stems, umbelliform, tomentose, the primary peduncle 2.8–5.5 cm. long, the rhachis to 5 mm. long, the secondary peduncles 1–3 mm. long. Staminate flowers: 25–55 per

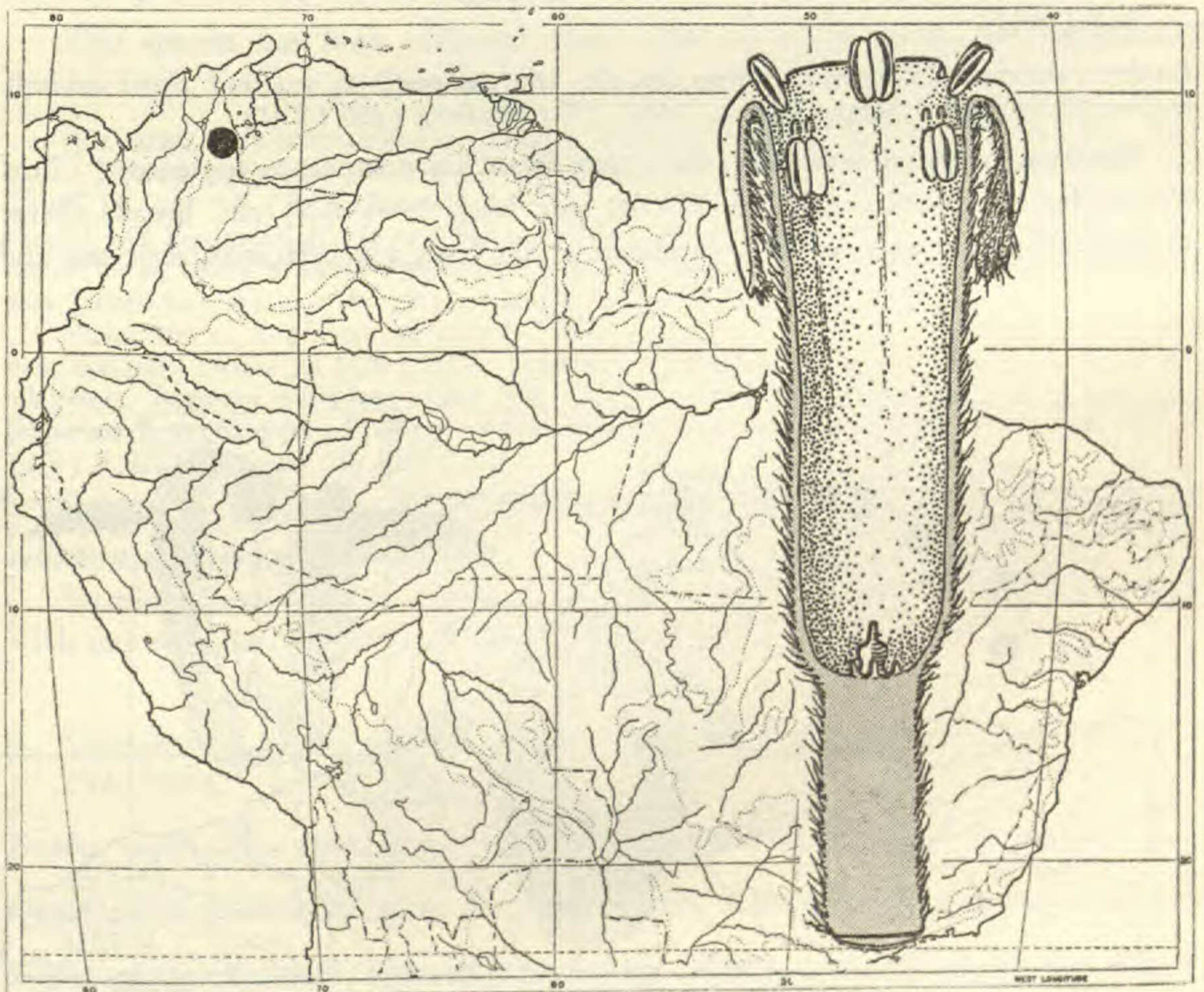


Fig. 7. *Daphnopsis purdiei*

inflorescence; pedicel 2.5–3.5 mm. long; calyx tube narrowly obconic to nearly tubular, 6–7 mm. long, 1.75–2.5 mm. broad at the orifice, tomentose without, glabrous within; calyx lobes subequal, indefinitely papillate within, about 2 mm. long, 1.5 mm. broad; petals 8, papilliform, approximately 0.25 mm. long, inserted immediately above the alternisepalous stamens; antisepalous stamens inserted at the orifice, exserted, the alternisepalous inserted two anthers' lengths below the orifice, included, the anthers oblong, about 0.75 mm. long, 0.5–0.75 mm. broad, sessile; disc of several small free lobes, glabrous; pistillode lageniform, about 0.75 mm. long, glabrous. Pistillate flowers and fruit not seen.

COLOMBIA: NORTE DE SANTANDER: Ocaña, Purdie s. n. [(♂) A, F, K, NY, US].

According to Purdie this tree is known as *abousita*. The sap is supposedly caustic, causing blisters and much pain.

Meissner based his description of this species on a specimen in the Arnott Herbarium and presumably this specimen is now on deposit at Glasgow. He also retained a fragment of this specimen for his personal herbarium which is now on deposit at New York.

This species seems to be closely related to *D. caracasana* Meissn. and *D. macrophylla* (HBK.) Gilg.

3. *DAPHNOPSIS CARACASANA* Meissn. in DC. Prod. 14:521. 1857. [T.: Karsten 211 (♀)!]

Daphne caracasana Klotzsch, ex Meissn. loc. cit. 1857, as syn.

Daphnopsis bogotensis Meissn. loc. cit. 1857. [T.: Hartweg 1366 (♀)!]

Shrubs or trees to 6 m. tall, the young branches ochraceous-tomentose. Leaf blades obovate to oblanceolate 3–8 (–14) cm. long, 1–4 (–6.5) cm. broad, obtuse to subacute at the apex, cuneate to obtuse at the base, subcoriaceous, sericeous and

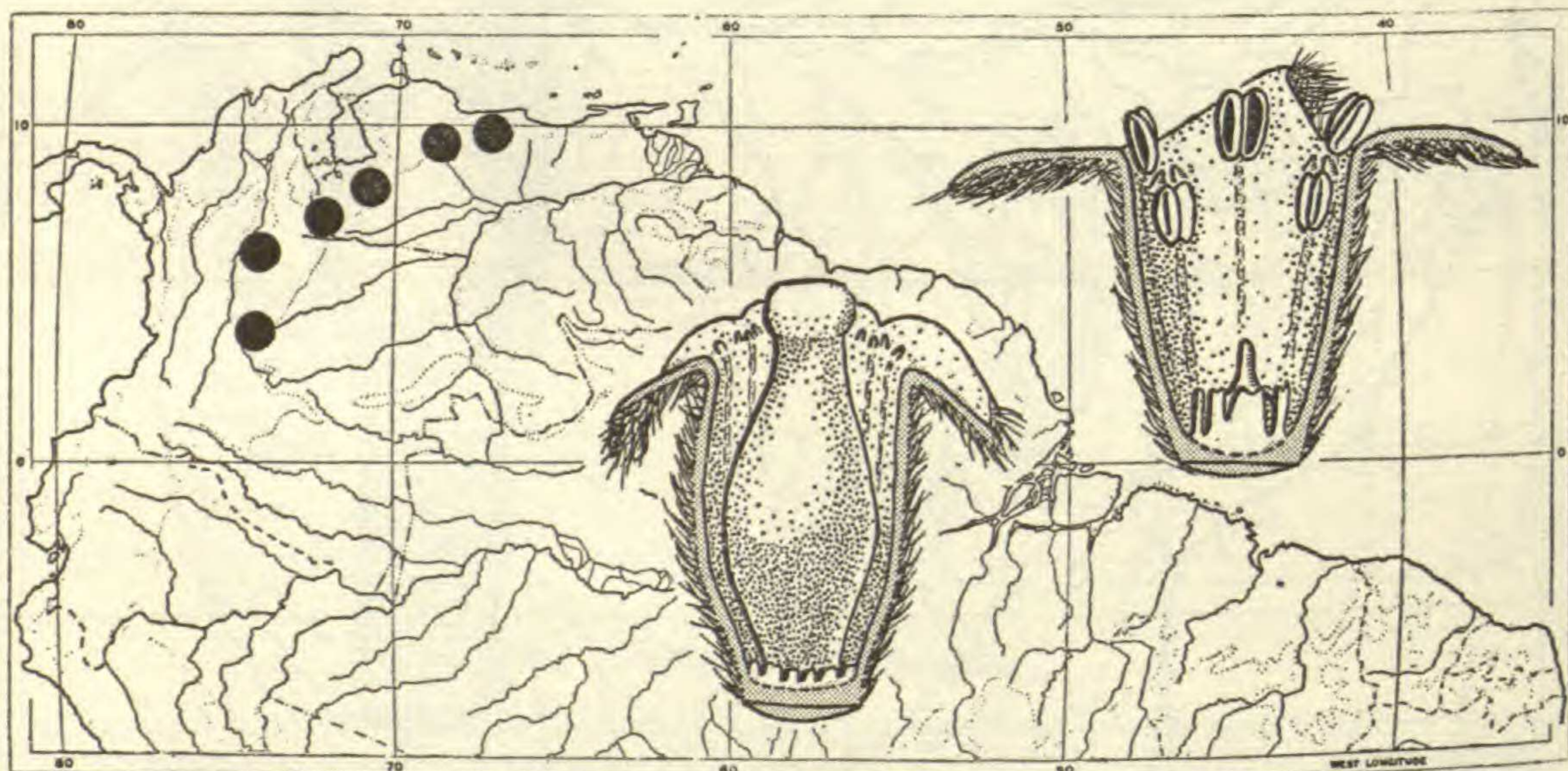


Fig. 8. *Daphnopsis caracasana*

glabrescent above and below, the costa plane above, emersed below, the primary lateral veins prominulous above, prominent below, arcuate-ascending; petiole 3–4 mm. long. Inflorescences borne from the young leaf stems, umbelliform, sericeous, the primary peduncle 0.7–4.0 cm. long, the rhachis 1–3 mm. long, the secondary peduncles 2–4 mm. long. Staminate flowers: 15–30 per inflorescence; pedicel about 0.5 mm. long; calyx tube campanulate, 2.0–3.5 mm. long, 1.5–2.0 mm. broad at the orifice, sericeous without, glabrous within; calyx lobes unequal, indefinitely papillate within, the outer 2.0–2.5 mm. long, about 1 mm. broad, the inner about 1.5 mm. long and broad; petals 8, papilliform, about 0.25 mm. long, inserted immediately above the alternisepalous stamens; antisepalous stamens inserted immediately above the orifice, exserted, the alternisepalous inserted below the orifice, included, the anthers oblong, 0.5–0.75 mm. long and broad, sessile; disc annular, free, irregularly lobed, glabrous; pistillode lageniform, 0.75–1.25 mm. long, glabrous. Pistillate flowers: 8–15 per inflorescence; pedicel about 0.5 mm. long; calyx tube campanulate to almost urceolate, 2–3 mm. long, 1.5–2.0 mm. broad at the orifice, sericeous without, glabrous within; calyx lobes essentially as in the staminate flowers; petals 8, papilliform, about 0.25 mm. long; staminodia 8, papilliform; disc annular, basally adnate, irregularly lobed, glabrous; pistil 3.0–3.5 mm. long, the ovary ovoid, 1.5–2.5 mm. long, glabrous, the style about 0.5 mm. long, rather thick, the stigma capitate, shortly exserted. Drupe ovoid, to 13 mm. long, 7 mm. in diameter, glabrous.

This species has been collected from 1900 to 3250 meters and apparently flowers from January to October.

COLOMBIA: CUNDINAMARCA: Bogotá, *Goudot s. n.* [P (♂ ♀)], *Cuatrecasas 5251* [(♀) F, US], *7983* [(♂) F, US], *Triana 1066* [(♀) MICH, P, NY, US], *Schneider 104* [S (♀)], *200* [S (♀)], *Schultes 7016* [F (♂ ♀)], *Schultze 123* [US (♀)]; between Bogotá and Zipaquira, *Hartweg 1366* [(♀) NY (fragment), P, W]. SANTANDER: vicinity of Vetás, *Killip & Smith 17886* [(♀) A, F, NY, S, US]. WITHOUT PRECISE LOCALITY: *Bro. Ariste-Joseph s. n.* [US (♀)], *Karsten 211* [NY (♀ fragment)].

VENEZUELA: COJEDES: El Juncal, *Pittier 13718* [(♀) F, US]. FEDERAL: mountains near Galipán, *Pittier 79* [US (♀)]. MÉRIDA: Tovar, *Fendler 396* [(♂) A, K, M, NY]. TÁCHIRA: between Villapaez along Río Táchira, near Colombian-Venezuelan boundary, *Steyermark 57164* [(♂) F, NY]. WITHOUT PRECISE LOCALITY: El Avila, *Williams 11045* [(♀) F, US], *Delgado 189* [US (♂)].

Known in Venezuela as *palo rejo* and *menurito* according to Steyermark and *sabanero* according to Pittier.

Staminate specimens at anthesis are scarce in the material examined. Flowers with one or more aborted anthers are often found.

4. *DAPHNOPSIS MACROPHYLLA* (HBK.) Gilg, in Engl. & Prantl Pflanzenf. 3^{6a}: 236. 1894.

Daphne macrophylla HBK. Nov. Gen. 2:151. 1817. [T.: *Humboldt & Bonpland 3209* (♀)!]

Daphnopsis humboldtii Meissn. in DC. Prod. 14:520. 1857, (based on *Daphne macrophylla* HBK.)

Daphnopsis humboldtii β ? *boissieriana* Meissn. loc. cit. 521. 1857. [T.: *Pavon s. n.* (♂)]

Daphne laurifolia Willd. ex Meissn. loc. cit. 520. 1857, as syn.

Daphnopsis loranthifolia Standl. in Trop. Woods 42:30. 1935. [T.: *Rimbach 230* (♂)!]

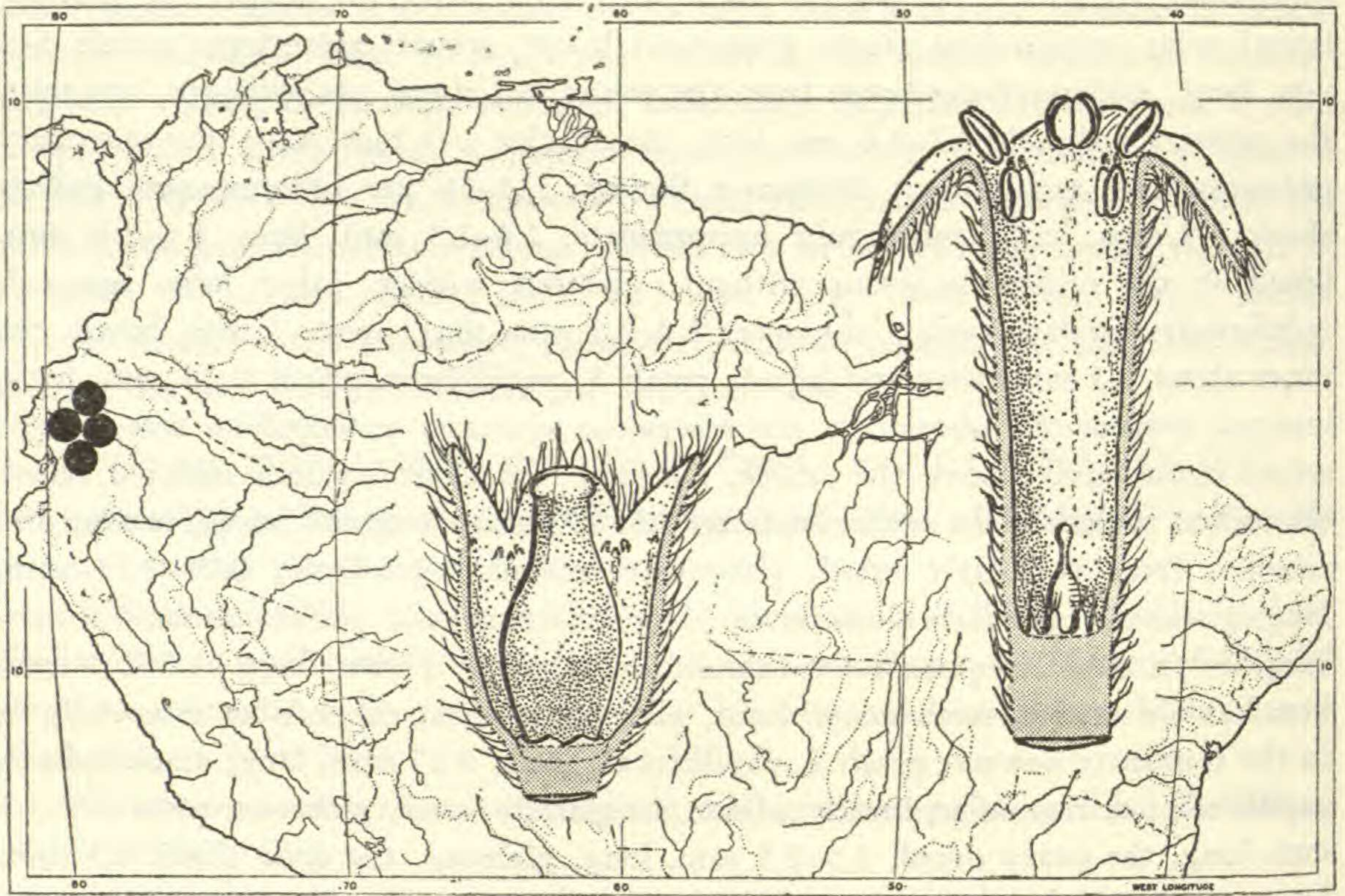


Fig. 9. *Daphnopsis macrophylla*

Shrubs to medium-sized trees, the young branches ochraceous-tomentose or sparsely to densely sericeous and glabrescent. Leaf blades elliptic to obovate, 6–15 cm. long, 2–6 cm. broad, acute to obtuse at the apex, acute at the base, subcoriaceous, tomentose or sericeous and glabrescent above and below, the costa immersed above, emersed below, the primary lateral veins prominulous above, prominent below, arcuate-ascending; petiole 3–7 mm. long. Inflorescences borne from the young leafy stems, umbelliform, sparsely tomentose to densely sericeous. Staminate inflorescence with the primary peduncle 2–5 cm. long, the rhachis 2–5 mm. long, the secondary peduncles 1–3 mm. long, dilated distally. Staminate flowers: 35–55 per inflorescence; pedicel about 1 mm. long; calyx tube narrowly obconic, sometimes inflated towards the base, 4.5–5.5 mm. long, 1.5–2.0 mm. broad at the orifice, sericeous without, glabrous within; calyx lobes unequal, indefinitely papillate within, the outer 1.5–2.5 mm. long, 1.5–2.0 mm. broad, the inner 1.5–2.0 mm. long, 1.5–2.5 mm. broad; petals 8, papilliform, about 0.25 mm. long, inserted immediately above the alternisepalous stamens; antisealous stamens inserted immediately above the orifice, exserted, the alternisepalous inserted slightly more than an anther's length below the orifice, included, the anthers oblong, 0.5–1.0 mm. long, 0.5–0.75 mm. broad, sessile; disc annular, free, deeply and irregularly lobed, glabrous or with 1 to several hairs at the apex; pistillode tenpin-shaped, 0.5–1.5 mm. long, glabrous. Pistillate inflorescence with the primary peduncle

3–15 mm. long, the rhachis about 2 mm. long, the secondary peduncles 2–5 mm. long. Pistillate flowers: 10–20 per inflorescence; pedicel about 1 mm. long; calyx tube more or less campanulate, 2–3 mm. long, about 2 mm. broad at the orifice, tomentose to tomentellose without, glabrous within; calyx lobes unequal, indefinitely papillate within, the outer 1–2 mm. long, 0.75–1.0 mm. broad, the inner 1.5 mm. long, 1 mm. broad; petals 8, papilliform; staminodia 8, papilliform; disc annular, basally adnate, undulate, glabrous; pistil 3–4 mm. long, the ovary ovoid, glabrous, the style 0.75–1.0 mm. long, thickening with age, the stigma capitate, exserted. Drupe turbinate to ovoid, 6–15 mm. long, 6–8 mm. in diameter, glabrous.

Found at altitudes of 2400 to 2600 meters where it flowers from July to November.

ECUADOR: BOLIVAR: Chillanes, *Solis 6641* [F (♂)]. CHIMBORAZO: Bosquecito de "El Carmen", parroquia Sibambe, *Solis 5531* [F (♂)]; Huigra, *Little 6765* [US (♀)]; Allantanga, *Spruce 5567* [(♂) K, NY, P, W]. PICHINCHA: Quito, *Humboldt & Bonpland 3209* [(♀) F, P]. TUNGURAHUA: Baños, in fruticetis secus fl. Pastasa, *Spruce 5184* [A (♀), C (♂), K (♂), NY (♂), P (♂), S (♂), W (♂)]; ad pag. Baños, *Holmgren 351* [(♂) F, S, US]; north slope of Mt. Tungurahua, *Rimbach 621* [(♂) F, MICH, NY, US]. WITHOUT PRECISE LOCALITY: W. Cordillera, *Rimbach 230* [(♂) A, F, S, US], *Remy s. n.* [P (♀)].

Known in Ecuador as *sapan de perro* and *sapan serrano*. According to Solís the fruit are employed as a vigorous purgative.

The species is quite variable, particularly in pubescence. *D. loranthifolia* Standl. appears to be a specimen representative of the most pubescent extreme. Past attempts to separate the specimens into distinct entities seem to be unfounded.

The probability that *D. purdiei*, *D. caracasana* and *D. macrophylla* are descendants of a common ancestor seems likely. The vegetative characteristics of these species are not especially diverse and could possibly be environmentally induced. The important differences which serve to separate the species are found in the floral morphology; calyx tube shape, size and particularly disc structure. *Daphnopsis purdiei*, which is imperfectly known, appears to be primitive as deduced from the small, lobate, free, glabrous disc. *Daphnopsis caracasana* appears to be slightly advanced in that the disc lobes of the staminate flowers are more or less connate. The pistillate flowers have a disc which is slightly adnate at the base and which unfortunately cannot be compared with the equivalent structure in *D. purdiei*. *Daphnopsis macrophylla* appears more advanced in that the disc of the pistillate flower is not only slightly more adnate at the base but also is connate. The disc in the staminate flowers does not show similar development.

Although there appears to be a disjunction in the range of these three species it must be emphasized that they are all inhabitants of the Andean cordillera and that they presumably arrived at their present positions after being continuous at one time. This group of species is best thought of as a former "Rassenkreis" in which the populations have become isolated and floral differences have become great enough so that they cannot be treated as subspecies of the same species.

5. *DAPHNOPSIS PURPUSII* Brandg. in Univ. of Calif. Publ. Bot. 4:89. 1910. [T.: *Purpus 4116* (♂)!]

Daphnopsis purpusii var. *ebrenbergii* Domke, in Notizbl. 12:728. 1935. [T.: *Ebrenberg 1012* (♀)]

Daphnopsis decidua Domke, loc. cit. 726. 1935. [T.: *Purpus 4447'* (♂)]

Shrubs, the young branches woolly or glabrous. Leaf blades elliptic to obovate, 1–5 cm. long, 0.5–1.5 cm. broad, acute to rotund at the apex, cuneate at the base, subcoriaceous, glabrous or woolly and glabrescent above and below, the costa plane above, emersed below, the primary lateral veins prominulous on both surfaces, arcuate-ascending; petiole 1–3 mm. long. Inflorescences borne from the young leafy stems, umbelliform, tomentose, the primary peduncle 2–11 mm. long, the rhachis about 1 mm. long, the secondary peduncles less than 1 mm. long. Staminate flowers: 4–8 per inflorescence; pedicel 0.5–1.5 mm. long; calyx tube narrowly to broadly obconic, about 6.5 mm. long, 1–2 mm. broad at the orifice, densely sericeous to puberulent without, glabrous within; calyx lobes subequal, puberulent within, about 2.5 mm. long, 1.0–1.5 mm. broad; petals 8, papilliform to squamelliform, about 0.25 mm. long, inserted immediately below the orifice; antisepalous stamens inserted slightly above the orifice, exserted, the alternisepalous inserted slightly more than an anther's length below the orifice, included, the anthers oblong, about 0.75 mm. long, 0.5 mm. broad, sessile or subsessile; disc annular, basally adnate, short-lobate, glabrous; pistillode tenpin-shaped, 1.0–1.75 mm. long, glabrous. Pistillate flowers not seen. Fruit ovoid, 7–9 mm. long, 4–7 mm. in diameter, glabrous.



Fig. 10. *Daphnopsis purpusii*

MEXICO: PUEBLA: Acatzinio, *Bro. Nicolas 6105* [US (♂ ♀)]; Cerro de Paxtle, *Purpus 4116* [(♂ ♀) A, F, MO, NY, US]; Tehuacan, *Purpus 4447* [(♂) A, F, MO, US], *5707* [A (♀), BM (♀), F (♀), MO (♀), NY (♀), P (♂), US (♀)].

The plants of this species are readily separable into two groups on the basis of leaf pubescence: those which are woolly (typical *D. purpusii*) and those which are glabrous or essentially so (*D. purpusii* var. *ebrenbergii*). *Daphnopsis decidua* Domke is based on specimens which were collected very early in the growing season and upon maturity would be grouped with the glabrous specimens. The floral morphology is identical in all specimens examined and for this reason they are placed in a single species. The extreme pubescence differences could be due to the action of a single gene.

6. DAPHNOPSIS MOLLIS (Cham. & Schlechtd.) Standl. in *Contrib. U. S. Nat. Herb.* 23:1013. 1924, where parenthetically ascribed to Meissn.

Daphne bonplandiana HBK. var. *mollis* Cham. & Schlechtd. in *Linnaea* 6:364. 1831. [T.: *Schiede 1138* (♀)!]

Daphnopsis bonplandii β *mollis* (Cham. & Schlechtd.) Meissn. in *DC. Prod.* 14:521. 1857.

Shrubs or trees, 1–15 m. tall, the young branches ochraceous-tomentose. Leaf blades obovate to oblanceolate, 4–13 cm. long, 2.5–4.0 cm. broad, subcaudate-acuminate to acute or obtuse at the apex, attenuate at the base, subcoriaceous, glabrous above, densely hirsute to sparsely hirsute below, the costa immersed above, emersed below, the primary lateral veins prominulous above, prominent below, arcuate-ascending; petiole 4–7 mm. long. Inflorescences borne from the young leafy stems, umbelliform, hirsute. Staminate inflorescence with the primary peduncle 1.0–2.5 cm. long, the rhachis about 2 mm. long, the secondary peduncles 1–2 mm. long. Staminate flowers: 7–11 per inflorescence; pedicel 1.5–3.0 mm. long; calyx tube broadly campanulate, 2.5–3.0 mm. long, 2–3 mm. broad at the orifice; calyx lobes unequal, puberulent within, the outer 3.0–4.5 mm. long, 1.0–1.5 mm. broad, the inner about 2.75 mm. long, 2.5 mm. broad; petals 8, papilliform, about 0.25 mm. long, inserted immediately above the alternisepalous stamens; antisepalous stamens inserted about an anther's length above the orifice, exserted, the alternisepalous inserted about an anther's length below the orifice, exserted, the filaments unequal, antisepalous about 2.5 mm. long, alternisepalous 1.5–2.0 mm. long, the anthers oblong, 0.75–1.0 mm. long, 0.5 mm. broad; disc annular, completely adnate, undulate, glabrous; pistillode lageniform, about 1 mm. long, setose. Pistillate inflorescence with the primary peduncle 0.5–1.0 cm. long, the rhachis about 1 mm. long, the secondary peduncles 1–2 mm. long. Pistillate flowers: 3–8 per inflorescence; pedicel 2–3 mm. long; calyx tube campanulate, 2.0–2.5 mm. long, 1.5–2.5 mm. broad at the orifice, hirsute without, glabrous within; calyx lobes subequal, puberulent within, 1.0–1.5 mm. long and broad; petals 8, papilliform, extremely small; staminodia 8, papilliform; disc as in staminate flower; pistil about 3.75 mm. long, the ovary fusiform, setose toward the apex, the style about 1.5 mm. long, the stigma minutely capitate, greatly exserted. Drupe ovoid, 10–12 mm. long, 7–8 mm. in diameter, glabrous, the style sometimes persistent.

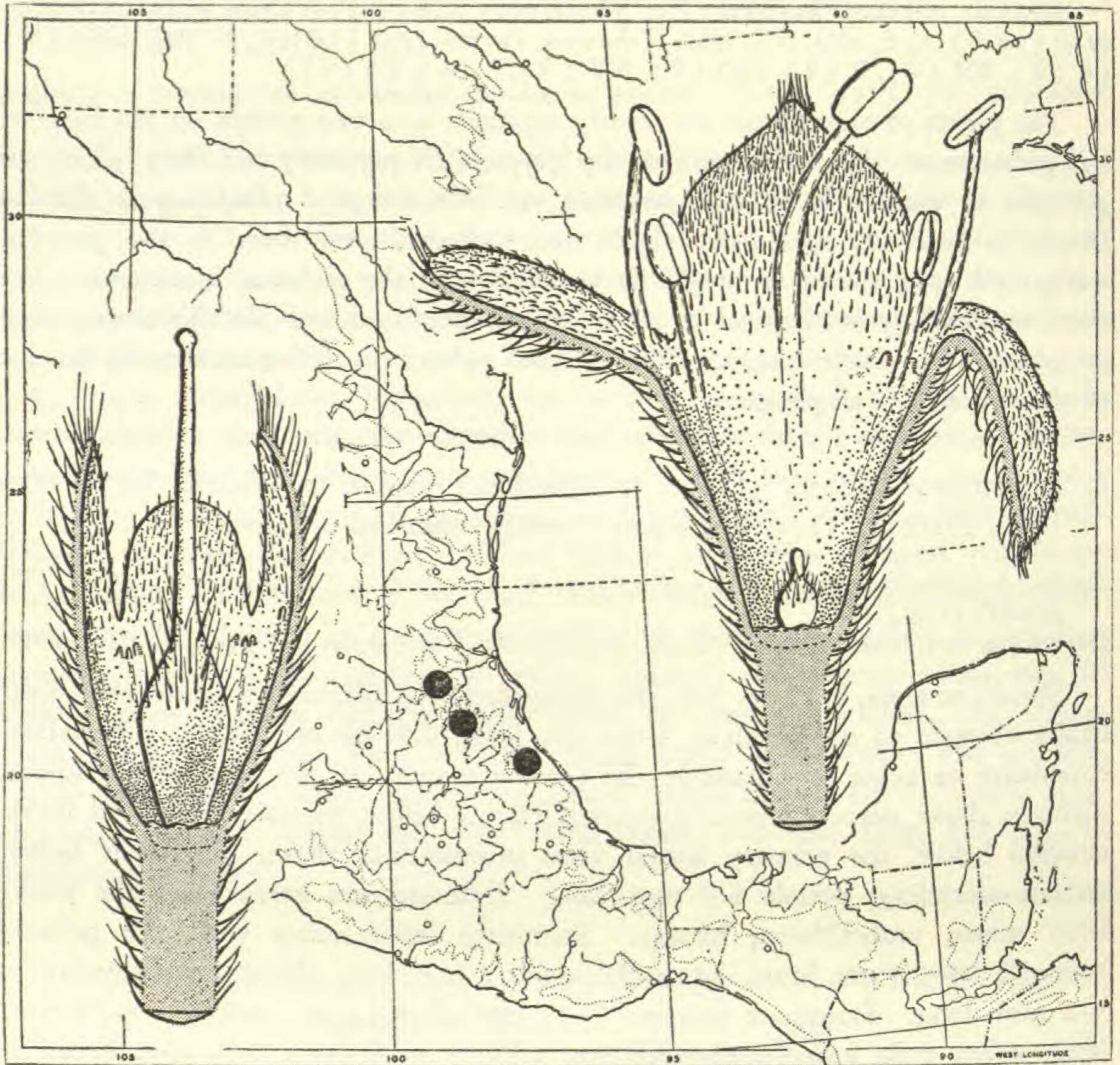


Fig. 11. *Daphnopsis mollis*

All specimens of this species examined were collected at altitudes from 300 to 1000 meters. Flowering specimens are known only from July and August although the flowering period is probably longer.

MEXICO: HIDALGO: above Chapulhacan, Kenoyer A617 [F (♀)], Lundell & Lundell 7183 [(♂) GH, MICH], Lundell 12235 [MICH (♀)]; Puerto de Zopilote, Lundell & Lundell 12409 [MICH (♂)]. SAN LUIS POTOSI: Tamasopo Canyon, near Las Canoas, Pringle 3563 [(♂ ♀) A, MICH, US]. VERACRUZ: Papantla, Scheide 209 [W (♀)], 1138 [(♀) MO, W].

Meissner correctly made the transfer of the *mollis* variety to the genus *Daphnopsis*, but, as was his custom, he did not ascribe it to the original author. Standley was apparently unaware of this custom and thus ascribed the epithet *mollis* to Meissner. Meissner was fully aware of Chamisso and Schlechtendahl's priority as evidenced by his citation of their publication.

7. *DAPHNOPSIS perplexa* Nevl. spec. nov.

Frutices vel arbores; ramis juvenibus tomentosus. Folia elliptica usque oblanceolata 5–12 cm. longa 1–4 cm. lata apice acuminata basi cuneata subcoriacea tomentosa usque glabrescentia venis primariis lateralibus arco-ascendentibus; petiolo 3–13 mm. longo. Inflorescentia umbelliformis tomentosa dense usque sparse; pedunculo primario 0.5–1.5 mm. longo; rhachide ca. 1 mm. longo; pedunculis secundariis ca. 1 mm. longis. Flores masculi non vidi. Flores feminei: 8–15 per inflorescentia; pedicello 2–5 mm. longo; calyce campanulato 1.25–2.5 mm. longo 1.0–1.5 mm. lato extus tomentoso intus glabro; calycis lobis subequalibus intus puberulis ca. 0.75 mm. longis 0.5 mm. latis; petalis 8 papilliformibus ca. 0.25 mm. longis; staminodiis 8 papilliformibus; disco humili adnato glabro; pistillo 2.0–2.5 mm. longo ovario ovato glabro stigmate capitato exserto. Fructus ovatus ca. 11 mm. longus 3–4 latus glaber. HOLOTYPUS: *Purpus 10191* (GH).

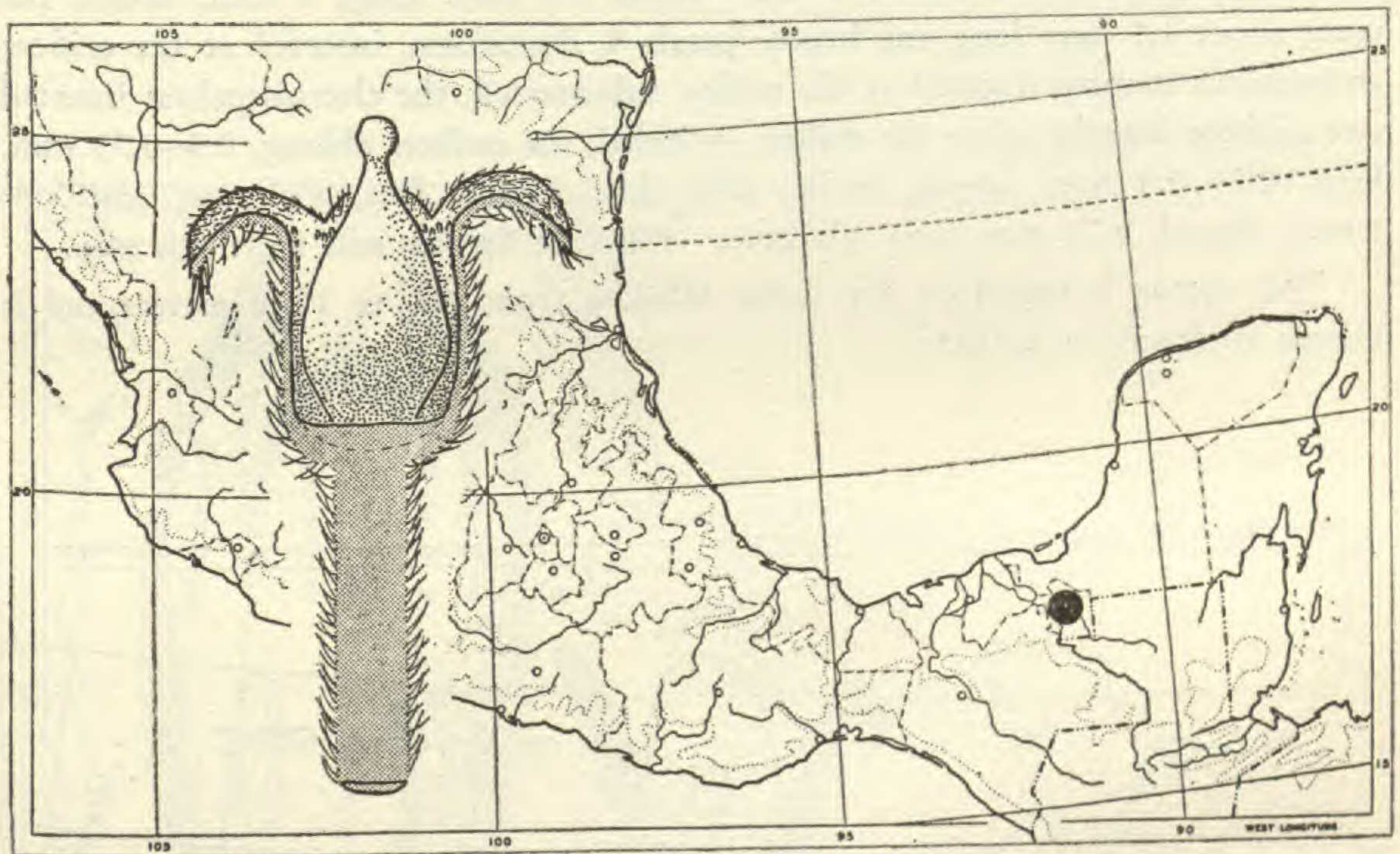


Fig. 12. *Daphnopsis perplexa*

MEXICO: TABASCO: Monserrate, *Purpus 10048* [(♀) NY, US], *10190* [(♀) M, S, US], *10191* [(♀) GH, US].

Although the species appears superficially similar to *D. americana* it is distinguished from it primarily by the presence of petals as well as by several other characters of secondary importance. The pistillate flower illustrated is probably a young fruit, neither immature pistillate flowers nor staminate flowers have been seen.

8. *DAPHNOPSIS MONOCEPHALA* Donn. Sm. in Bot. Gaz. 47:261. 1909. [T.: Kellerman 5714 (♂)!]

Daphnopsis retifera Standl. & Steyerl. in Field Mus. Publ. Bot. 22:254. 1940. [T.: Steyermark 31758 (s)!]

Shrubs to 3 m. tall, the young branches ochraceous-woolly and glabrescent. Leaf blades obovate to oblanceolate, 3–18 cm. long, 1–6 cm. broad, acute to obtuse at the apex, narrowly cuneate at the base, coriaceous, sparsely sericeous and soon glabrescent and olive-green becoming reddish-brown above on drying, strigose and gray-green below, the costa immersed above, emersed below, the primary lateral veins prominulous above, prominent below, arcuate-ascending; petiole 1–8 mm. long. Inflorescences borne from the young leafy stems, umbelliform, tomentose, the primary peduncle 0.7–3.5 mm. long, the rhachis about 1 mm. long, the secondary peduncles less than 1 mm. long. Staminate flowers: 30–40 per inflorescence; pedicel about 0.5 mm. long; calyx tube narrowly obconic, 3.0–3.5 mm. long, 1.5 mm. broad at the orifice, sericeous without, glabrous within; calyx lobes unequal, indefinitely papillate within, the outer about 1.5 mm. long, 1 mm. broad, the inner about 1.5 mm. long and broad; petals 4, digitiform, inserted at the orifice; antisepalous stamens inserted at the orifice, subexserted, the alternisepalous inserted two anthers' lengths below the orifice, included, the anthers oblong, 0.5–0.75 mm. long, 0.25–0.5 mm. broad, sessile; disc short-lobate, free, glabrous; pistillode tenpin-shaped, 0.75 mm. long, glabrous. Pistillate flowers and fruit not seen.

This species is found on dry rocky hillsides from 600 to 1100 meters and is known to flower in January.



Fig. 13. *Daphnopsis monocephala*

GUATEMALA: BAJA VERAPAZ: opp. El Rancho, *Kellerman 5714* [US (♂)]. CHIQUIMULA: divide on the railway above El Rincón, *Standley 74746* [F (s)], *80409* [F (s)]. GUATEMALA: near Fiscal, *Standley 80372* [(s) F, US]. JUTIAPA: between railroad station of Mita and town of Asunción Mita, *Steyermark 31758* [F (s)].

This species is reminiscent of *D. helleriana* of Puerto Rico and may be related to it. Unfortunately, pistillate flowers have not been observed in either species.

9. *DAPHNOPSIS HELLERIANA* Urb. *Symb. Ant.* 2:453. 1901. [T.: *Heller 4689* (♂)!]

Shrubs or trees (?), the young branches golden-tomentose and glabrescent. Leaf blades elliptic, oblong or obovate, 3–15 cm. long, 2.0–5.5 cm. broad, mucronulate to obtuse at the apex, cuneate at the base, coriaceous, glabrous and reddish-brown above, golden tomentose soon glabrescent and light green with reddish-brown pigment bordering the veinlets below, the costa plane above, emersed below, the primary lateral veins prominulous above, prominent below, arcuate-ascending; petiole 2–6 mm. long. Inflorescences borne on the young leafy stems, umbelliform,



Fig. 14. *Daphnopsis helleriana*

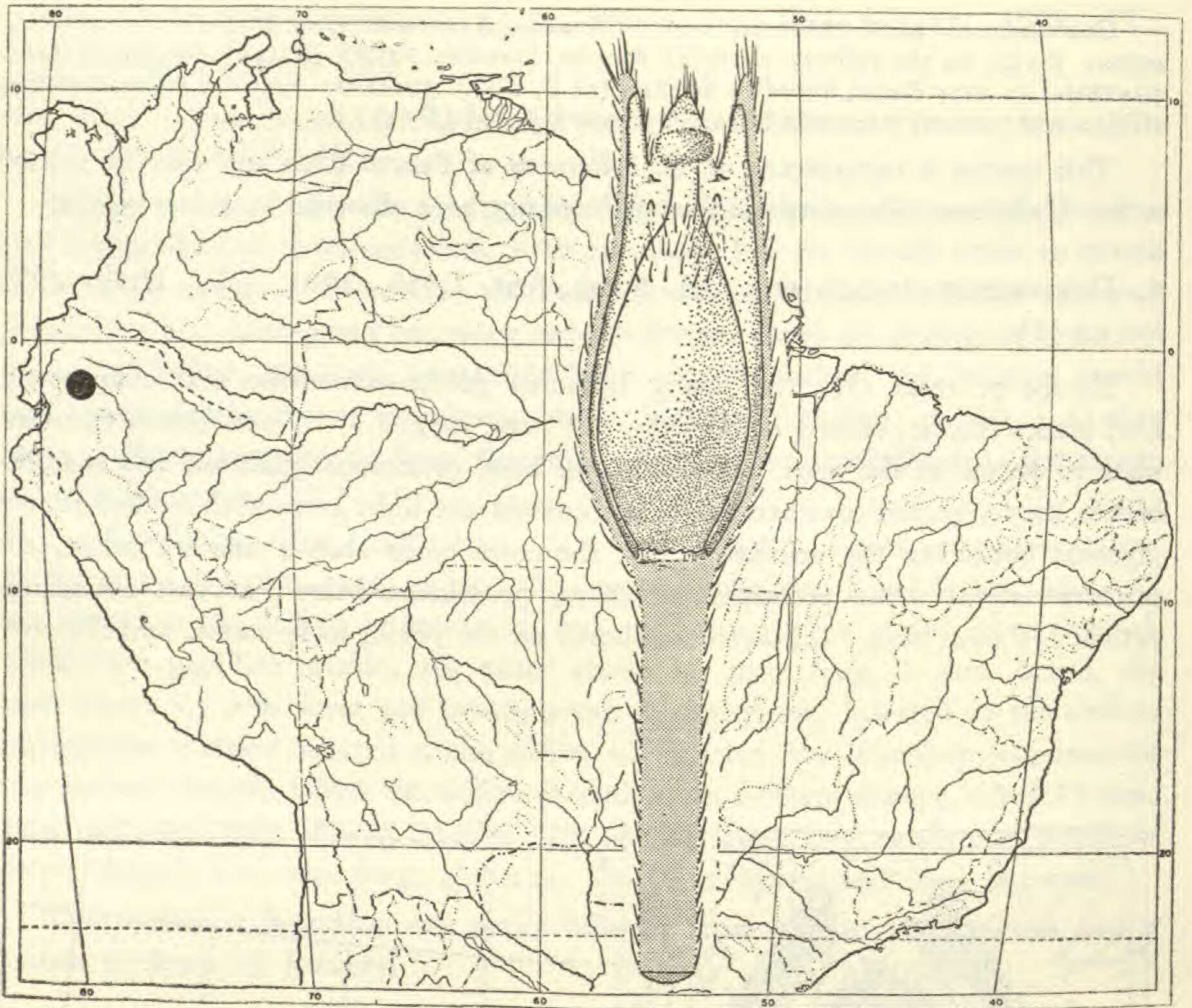


Fig. 15. *Daphnopsis equatorialis*

golden-tomentose, the primary peduncle 5–10 mm. long, nodding, the rhachis about 1 mm. long, the secondary peduncles 1–3 mm. long. Staminate flowers: 3–5 per inflorescence; pedicel 0.5–1.0 mm. long; calyx tube obconic (?), 5–6 mm. long, 2–3 mm. broad at the orifice, golden-tomentose without, glabrous and somewhat red-pigmented within; calyx lobes unequal, indefinitely papillate within, the outer about 2 mm. long, 2.5 mm. broad, the inner 1.5 mm. long and broad; petals 4, squamelliform, as long as broad, inserted at the orifice; antisepalous stamens inserted at the orifice, exserted, the alternisepalous inserted about two anthers' lengths below the orifice, included, the anthers oblong, 1.5 mm. long, 0.5 mm. broad, sessile; disc of a few irregular lobes almost as tall as the pistillode, free, glabrous; pistillode fusiform, about 1 mm. long, glabrous. Pistillate flowers and fruit not seen.

Apparently flowers in February although the specimens examined had not attained anthesis. Found on calcareous hills at an altitude of about 75 feet.

PUERTO RICO: SAN JUAN: near Bayamon, *Heller 4689* [(♂) A, F, GH, MICH, NY, US].

This very poorly known species is reminiscent of the preceding species, *D. monocephala*, but very distinct from it. It is also similar in vegetative characters to *D. ekmanii* which is treated with the species of undetermined status.

10. *DAPHNOPSIS equatorialis* Nevl. spec. nov.

Frutices; ramis juvenibus pubescentibus usque glabrescentibus. Folia elliptica usque oblongo-elliptica 22–28 cm. longa 6.0–7.5 cm. lata apice acuta basi cuneata coriacea glabra, venis primariis lateralibus arco-ascendentibus; petiolo 6–10 mm. longo. Inflorescentia feminea umbelliformis; pedunculo primario 6–8 mm. longo; rhachide 3–5 mm. longo; pedunculis secundariis ca. 0.25 mm. longis. Flores feminei 30–40 per inflorescentia; pedicello ca. 4 mm. longo; calyce urceolato ca. 4.5 mm. longo 1.5 mm. lato extus pubescente intus glabro; calycis lobis subequalibus intus glabris ca. 1 mm. longis 0.75 mm. latis; petalis 4, papilliformibus; staminodiis 8, papilliformibus; disco humili lobato libero glabro; pistillo 4.0–4.5 mm. longo ovario ovato superne piloso stigmatate capitato subexserto. Fructus ca. 2 mm. longus 1 mm. latus. Flores masculi non vidi. HOLOTYPUS: *Lugo 198* (S).

ECUADOR: NAPO-PASTAZA: Mera, *Lugo 198* [S (♀)].

This new species is very distinct from the other species of *Daphnopsis* having four petals. I was not prepared to find a four-petaled species in this area although I now suspect that increased collecting will turn up more novelties.

11. *DAPHNOPSIS OBLONGIFOLIA* Britt. & Wils. in Mem. Torrey Bot. Club 16:85. 1920. [T.: *Britton & Cowell 13301* (♂)!]

Shrubs to 2 m. tall, the young branches appressed-puberulent and glabrescent. Leaf blades linear-oblong to oblong or elliptic-oblong, 2–7 cm. long, 3–5 mm. broad, acute to mucronulate at the apex, narrowly cuneate at the base, coriaceous, somewhat thickened and revolute at the margin, glabrous above and below, the costa not visible above, prominulous below, the primary lateral veins not visible above, prominulous below, more or less parallel with the costa; petiole 2–3 mm. long. Inflorescences borne terminally or from axillary brachyblasts on the younger leafy stems, umbelliform, puberulent, the primary peduncle 1–7 mm. long, nodding, the rhachis less than 0.5 mm. long, the secondary peduncles less than 1 mm. long. Staminate flowers: 2–4 (–6) per inflorescence; pedicel about 3 mm. long; calyx tube obconic, 2.5–3.5 mm. long, 1.0–1.5 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes subequal, sparsely puberulent within, 1.0–1.5 mm. long and broad; petals 4, papilliform, less than 0.25 mm. long, inserted at the orifice; antisealous stamens inserted immediately above the orifice, exserted, the alternisealous inserted less than two anthers' lengths below the orifice, included, the anthers oblong, about 0.5 mm. long, 0.25–0.5 mm. broad, sessile; disc of free lobes, glabrous; pistillode lageniform, 0.5–0.75 mm. long, minutely setose. Pistillate flowers: 2–3 per inflorescence; pedicel about 2.5 mm. long; calyx tube campanulate, about 1.5 mm. long, 1 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes unequal, sparsely puberulent within, the outer 0.25



Fig. 16. *Daphnopsis oblongifolia*

mm. long, 0.5 mm. broad, the inner 0.5 mm. long and broad; petals as in staminate flowers; staminodia 8, obscure; disc annular, free, irregularly lobed, glabrous; pistil about 1.5 mm. long, the ovary ovoid, setose at the apex, the style thickened, the stigma capitate, included. Fruit not seen.

Flowers from March to late June in serpentine areas.

CUBA: CAMAGÜEY: sab. de la Matanzas, Roig 810 [NY (?)]. SANTA CLARA: serpentine area 10 kms. south of Santa Clara, Howard, Briggs, Kamb, Lane & Ritland 292 [IAN (?), MO (?), NY (♂), US (?)]; near Santa Clara, Bro. León 15625 [(?) MO, NY], Britton & Cowell 13301 [(♂) A, F, MO], Ekman 12035 [S (♂)], 14035 [NY (♀)], 18833 [S (♂)]; Santa Clara towards Manicaragua, Britton & Cowell 10256 [(?) F, NY, US].

Specimens of this species are quite similar to *D. hispaniolica* and *D. calcicola* due to the similarity of vegetative parts. It may be closely related to the following species, *D. calcicola*, but differs from it primarily in the small petals.

12. *DAPHNOPSIS CALCICOLA* Ekm. ex Urb. Symb. Ant. 9:407. 1925. [T.: Ekman 16669 (♀)!]

Shrubs or small trees, the young branches subsericeous and glabrescent. Leaf blades obovate-oblong, 2–4 cm. long, 0.5–1.3 cm. broad, more or less obtuse at the apex, cuneate-attenuate at the base, coriaceous, strigose and glabrescent above and below, the costa and primary lateral veins prominent above and below, the primary lateral veins almost parallel with the costa; petiole 2–3 mm. long. Inflorescences borne from the young leafy stems, umbelliform, sericeous, the primary



Fig. 17. *Daphnopsis calcicola*

peduncle 2–6 mm. long, the rhachis about 1 mm. long, the secondary peduncles about 1 mm. long. Staminate flowers not seen. Pistillate flowers: 3–6 per inflorescence; pedicel 2–3 mm. long; calyx tube campanulate, about 1.5 mm. long, 1.0–1.5 mm. broad at the orifice, tomentose without, glabrous within; calyx lobes subequal, tomentose within, 0.75 mm. long, 0.5 mm. broad; petals 4, obovate, tomentose, about 0.75 mm. long, 0.5 mm. broad; staminodia absent; disc annular, basally adnate, short-lobed, glabrous; pistil 2.0–2.5 mm. long, the ovary ovoid, minutely setose towards the apex, the style somewhat thickened, the stigma capitate, exserted. Drupe ellipsoid, 9–10 mm. long, 5–6 mm. in diameter, minutely setose.

Found on limestone at about 500 meters altitude, flowers from June to November.

CUBA: PINAR DEL RÍO: Viñales in Ensenada de Vega Cuchilla in Sierra del Sitio Santo Tomás, *Ekman 16669* [(♀) NY, S], *18010* [(♀) NY, S].

The similarity of the leaves of *D. hispaniolica*, *D. oblongifolia* and *D. calcicola* has been mentioned previously but it may be worthwhile to point out that the similarity is not as strong as the dissimilarity between the leaves of these species and those which comprise the remainder of the genus. These three species are inhabitants of either limestone or serpentine areas and the peculiar leaf shape may be involved with some adaptation for life in these soils.

The petals of *D. calcicola* are the largest of any in the genus and appear to be excellent material for the study of petal anatomy, except for the paucity of material.

13. *DAPHNOPSIS OCCIDENTALIS* (Sw.) Krug & Urb. in Engl. Bot. Jahrb. 15:349. 1893.

Daphne occidentalis Sw. Prod. 63. 1788. [T.: Swartz s. n. (s)!]

Gastrilia umbellata Raf. Flor. Tellur. 4:105. 1836, (based on *Daphne occidentalis* Sw.)

Daphnopsis swartzii Meissn. in DC. Prod. 14:522. 1857, (based on *Daphne occidentalis* Sw.)

Shrubs or slender trees to 10 m. tall, the young branches puberulent and glabrescent. Leaf blades oblanceolate, obovate or elliptic, 3–15 cm. long, 1–4 cm. broad, subcaudate-acuminate, acute or obtuse at the apex, attenuate-cuneate at the base, membranaceous, sericeous and glabrescent above, sericeous to appressed-puberulent below, the costa emersed above and below, the primary lateral veins prominent above and prominulous below, arcuate-ascending; petiole about 3 mm. long. Inflorescences borne from the young leafy stems, umbelliform, puberulent. Staminate inflorescence with the primary peduncle 1–8 cm. long, the rhachis 1–3 mm. long, the secondary peduncles 0.5–2.0 mm. long. Staminate flowers: 5–12 per inflorescence; pedicel 2–5 mm. long; calyx tube obconic, 3.5–5.5 mm. long, 1.0–1.5 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes unequal, indefinitely papillate within, the outer about 2.0 mm. long, 1.25–1.5 mm. broad, the inner about 1.5 mm. long, 1.0 mm. broad; petals connate into an obscure faucal annulus with 4 prominent alternisepalous lobes; antisepalous stamens inserted at the orifice, exserted, the alternisepalous inserted below the orifice, included, the

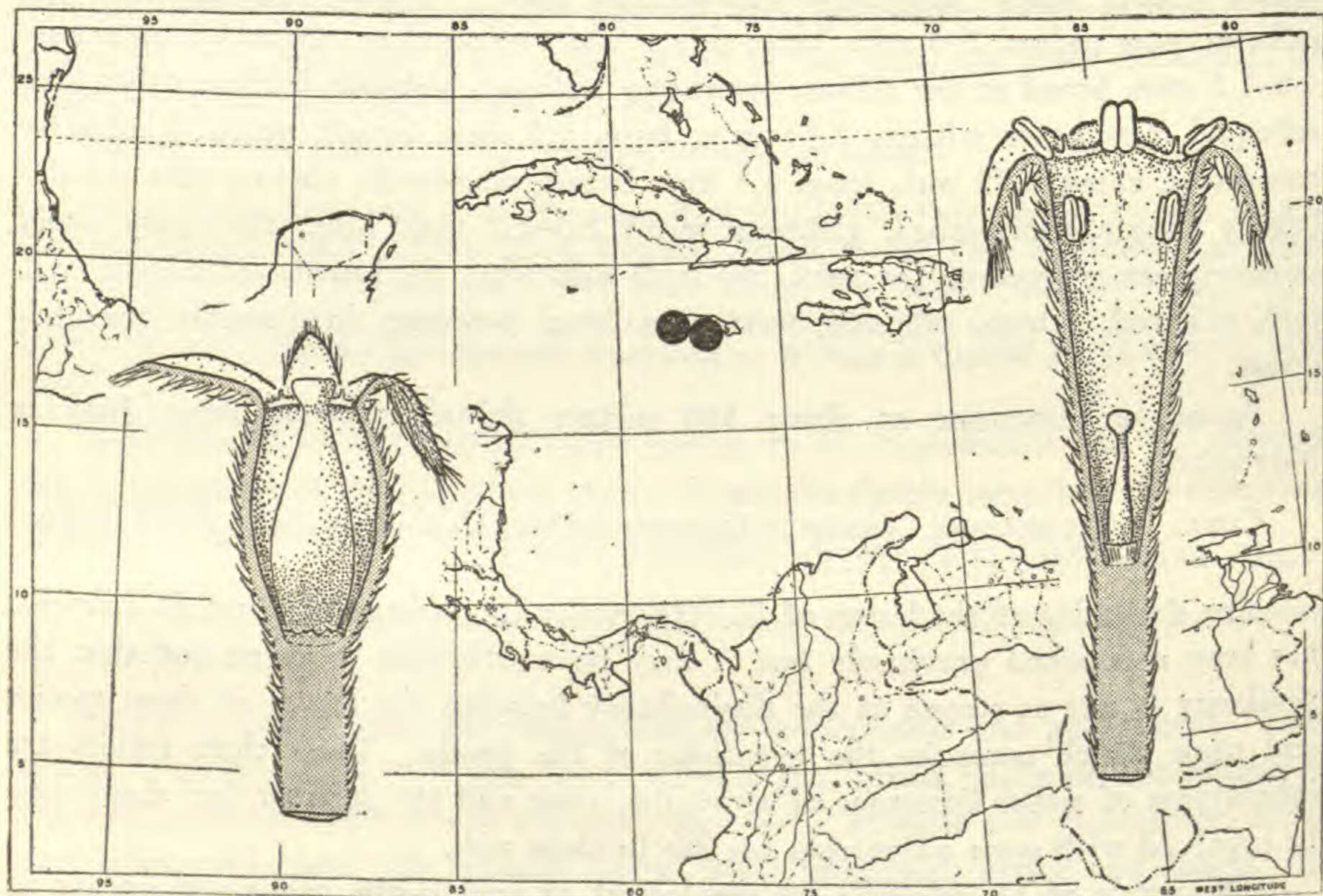


Fig. 18. *Daphnopsis occidentalis*

anthers oblong, 0.5–0.75 mm. long, 0.5 mm. broad, sessile; disc annular, free, about 0.25 mm. tall, erose, glabrous; pistillode tenpin-shaped, 1.5 mm. long, glabrous. Pistillate inflorescence with the primary peduncle 1.0–3.5 cm. long, the rhachis about 1 mm. long, the secondary peduncles 0.1–3.0 mm. long. Pistillate flowers: 5–15 per inflorescence; pedicel 1–4 mm. long; calyx tube urceolate, about 2 mm. long, 1.0–1.25 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes unequal, indefinitely papillate within, the outer 1.5 mm. long, 1 mm. broad, the inner about 1 mm. long, 0.75 mm. broad; petals connate into an obscure faucal annulus with 4 prominent alternisepalous lobes; staminodia absent; disc annular, basally adnate, about 0.25 mm. tall, erose, glabrous; pistil about 2.25–2.5 mm. long, the ovary ovoid, glabrous, the style somewhat thickened, the stigma capitate, exserted. Drupe ovoid, approximately 13 mm. long, 10 mm. in diameter, glabrous, white.

Flowers from August to October at altitudes of 800 to 100 meters.

JAMAICA: CLARENDON: Peckham Woods, *Harris 11185* [F (♂), NY (♂), US (♂ ♀)]; Croft's Mountain, *Harris 11218* [(♂) F, MO, NY, US]. MANCHESTER: Battersea Woods near Christiana, *Harris 8269* [A (♀), F (♀), NY (♀), P (♂)]; ½ mile NW of Christiana, *Proctor 10585* [(♀) A, MO]. ST. ANDREW: Mona Hill, vicinity of Kingston, *Britton 381* [NY (?)]. ST. ANN: 2 mi. w. of Albion, *Howard & Proctor 14883* [A (♂)]. ST. CATHERINE: Mt. Diabolo, *Harris 8965* [(♂) A, F, NY], *8967* [(♀) F, NY, S], *9002* [(♀) F, NY]. ST. ELIZABETH: Santa Cruz Mountains, Potsdam, *Britton 1287* [NY (♂)]; near Troy, *Harris 8793* [(♂) F, NY, W], *9394* [(♂) A, F, NY US]. WITHOUT PRECISE LOCALITY: Iron Face, Chester Vale, *Harris 10023* [(♀) F, NY, US]; *Alexander s. n.* [NY (♂)], *Purdie s. n.* [S (♀)], *Swartz s. n.* [(s) C, S].

This species, which has very variable leaves, is easily distinguishable by its long, slender primary peduncles and by the presence of a faucal annulus with four prominent alternisepalous lobes.

14. *DAPHNOPSIS liebmannii* Nevl. spec. nov.

Frutices nisi arbores; ramis juvenibus hispidulis. Folia elliptica 3–7 cm. longa 1.0–2.5 cm. lata apice acuminata basi cuneata chartacea supra glabra subtus hirtella, venis primariis lateralibus arco-ascendentibus; petiolo 2–4 mm. longo. Inflorescentia umbelliformis strigosa; pedunculo primario 2–5 mm. longo; rhachide ca. 0.25 mm. longo; pedunculis secundariis 0.5–2.0 mm. longis. Flores masculi 4–8 per inflorescentia; pedicello obsoleto; calyce obconico 7–9 mm. longo 1.0–1.5 mm. lato extus hispidulo intus glabro; calycis lobis subequalibus intus glabris ca. 2 mm. longis 1.5 mm. latis; petalis in annulum brevissimum connatis; staminibus in planis 2, antheris oblongis 1.0–1.5 mm. longis 0.5 mm. latis sessilibus; disco humili 4-lobato libero pubescente; pistillodio ampulliformi apice quamquam dilatato ca. 1.5 mm. longo pubescente. Flores feminei 6–14 per inflorescentia; pedicello ca. 1 mm. longo; calyce urceolato 2 mm. longo 0.5–0.75 mm. lato extus hispidulo intus glabro; calycis lobis subequalibus intus glabris ca. 1 mm. longis 0.5 mm. latis; petalis in annulum brevissimum connatis; staminodiis 4 papilliformibus; disco humili lobato libero pubescente; pistillo ca. 2.5 mm. longo ovario ovato superne minute piloso stigmatate capitato exserto. Fructus ovatus ca. 7 mm. longus ca. 4 mm. latus. HOLOTYPUS: *Liebmann 4293* (F).

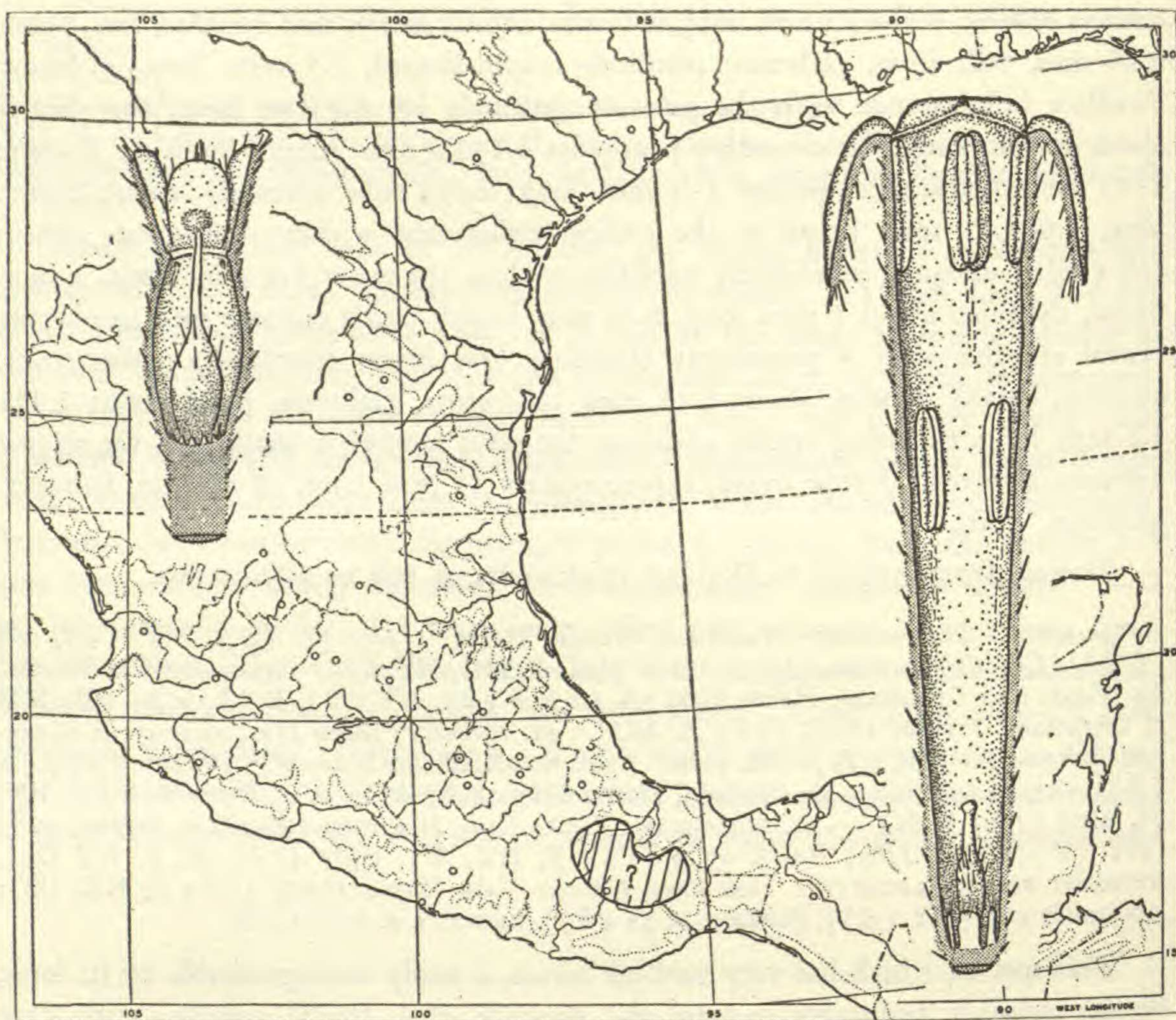


Fig. 19. *Daphnopsis liebmanni*

MEXICO: OAXACA: Laguna, Liebmann 4293 [A (♂ ♀), C (♂), F (♂ ♀)], 14383 [A (♂), C (♂ ♀), F (♂), US (♀)].

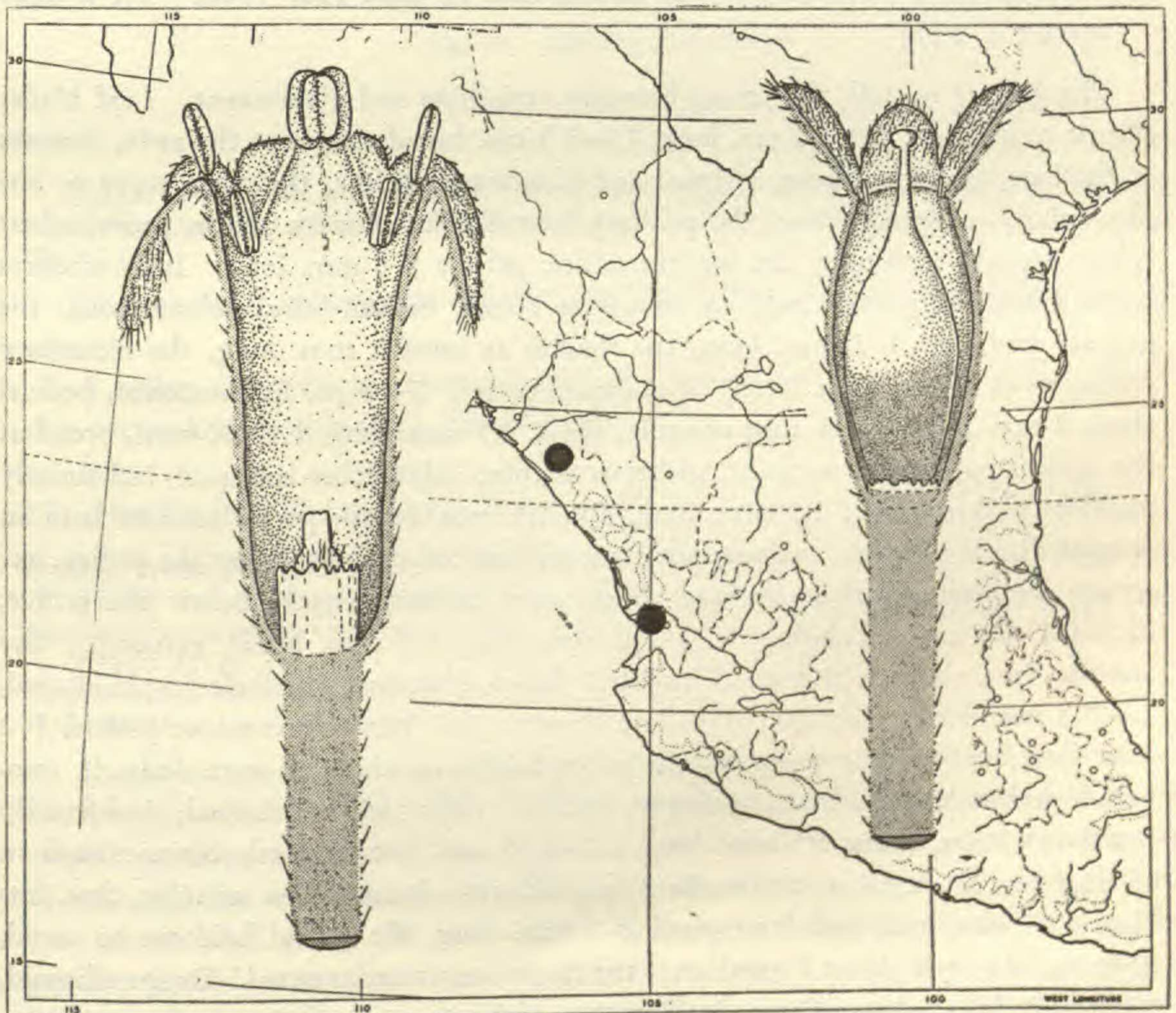
This new species is known only from two Liebmann collections which are simple marked "Laguna, August 1842". I have assumed the place of collection to be in Oaxaca based on the following information contained in *Chênes de l'Amerique Tropicale* by A. S. Ørsted, 1869, page viii.

"Après avoir visité les ruines du palais de Mitla, Liebmann quitta Oajaca le 1^{er} Juin, parcourut tout le Mineral oriental d'Oajaca, et fit l'ascension du célèbre monte Sempoaltepic, qui s'élève à une hauteur de 12000 pieds, et dont la végétation est toute différente de celle de l'Orizaba. Dans la contrée montagneuse peu connue et peu habitée de Chinantla, Liebmann fit une riche moisson de plantes nouvelles, parmi lesquelles beaucoup de palmiers et de Chênes. A son retour de Chinantla, il passa un mois dans une plantation de sucre, au pied du Sempoaltepec; il continua ensuite sa route par Villa Alta, la mine d'argent de Gertrudes près Talea, et Tanetze, franchit le mont El Pelado (9800 pieds), et s'arrêta à l'hacienda de Yavesia, qui était alors le siège de la 'Mexican Silvermining Company'.

"Liebmann séjourna un peu plus de deux mois dans la partie occidentale de Mexique; il quitta Oajaca au commencement d'Octobre . . ."

15. *DAPHNOPSIS mexiae* Nevl. spec. nov.

Frutices vel arbores usque 7 m. alti; ramis juvenibus subsericieis atque glabrescentibus. Folia elliptica usque oblongo-elliptica 5–15 cm. longa 2–6 cm. lata apice rotundata usque acuta vel acuminata basi acuta chartacea supra et subtus puberulentia et glabrescentia, venis primariis lateralibus arco-ascendentibus; petiolo 2–5 mm. longo. Inflorescentia mascula umbelliformis; pedunculo primario 1.5–3.0 cm. longo; rhachide 2–5 mm. longo; pedunculis secundariis 1–2 mm. longis. Flores masculi 20–55 per inflorescentia; pedicello 3–4 mm. longo; calyce obconico 5–6 mm. longo 2–3 mm. lato extus strigilloso intus glabro; calycis lobis subequalibus intus pubescentibus 1.5–2.5 mm. longis ca. 1.5 mm. latis; petalis in annulum brevissimum connatis; staminibus in planis 2, antheris suborbicularibus 0.5–1.0 mm. longis 0.5–0.75 mm. latis sessilibus; disco cupuliformi ca. 1 mm. alto lobato glabro; pistillodio lageniformi ca. 1.5 mm. longo pubescente. Inflorescentia feminea umbelliformis; pedunculo primario 1.0–1.5 cm. longo; rhachide 2–3 mm. longo; pedunculis secundariis 1–2 mm. longis. Flores feminei 7–20 per inflores-

Fig. 20. *Daphnopsis mexiae*

centia; pedicello 3–5 mm. longo; calyce urceolato ca. 3.5 mm. longo 1 mm. lato extus strigilloso intus glabro; calycis lobis subequalibus intus pubescentibus 1.0–1.5 mm. longis et latis; petalis in annulum brevissimum connatis; staminodiis 8 subfiliformibus; disco cupuliformi adnato subtus glabro; pistillo 4.0–4.5 mm. longo ovario obovato glabro stigmate capitato exserto. Fructus ovatus ca. 10 mm. longus 6 mm. latus. HOLOTYPUS: *Mexia 618* (MO).

Collected at altitudes from 1000 to 1500 meters. Known to flower in September.

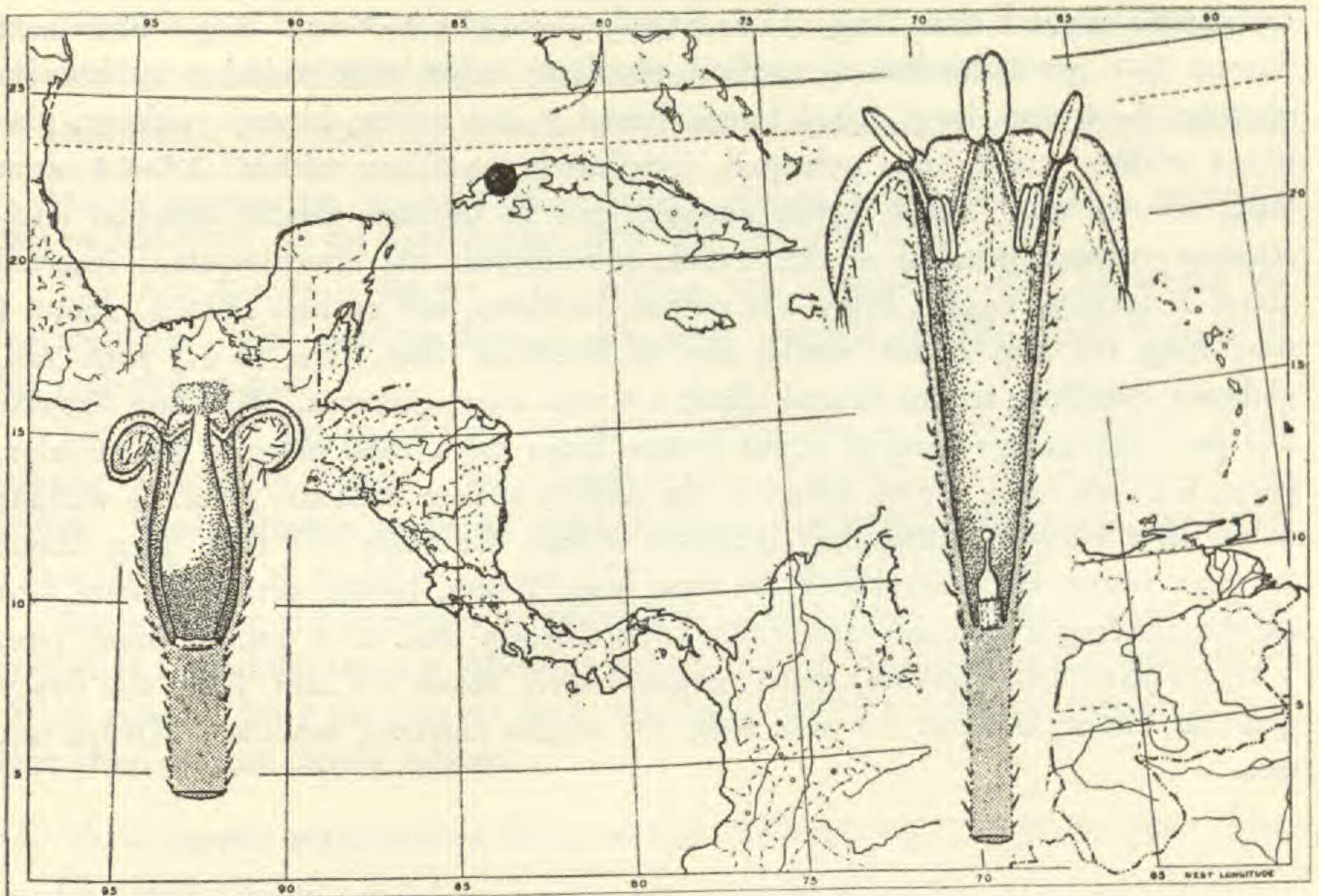
MEXICO: NAYARIT: road from Tepic to Jalcocotan, *Mexia 618* [(♂) A, F, GH, MO, US], *McVaugh 12110* [MICH (♀)]. SINALOA: Sierra Tacuichamona summit, *Gentry 5682* [GH (♀)].

This new species, named in memory of Mrs. Ynes Mexia, is quite distinct from other Mexican species in which the petals are connate into an obscure faucal annulus. In the staminate flowers the rather long pedicel, the pubescent, lageniform pistillode and the cupuliform disc are all distinctive features. The pistillate flowers are distinctive because of the rather long pedicel and the subfiliform staminodia.

16. *DAPHNOPSIS GUACACOA* Wr. ex Griseb. Cat. Pl. Cub. 110. 1866. [T.: *Wright 2579* (♂ ♀)!]

Shrubs to 1 m. tall, the young branches strigillose and glabrescent. Leaf blades elliptic to obovate, 2.0–6.5 cm. long, 1.0–3.5 cm. broad, retuse at the apex, cuneate at the base, glabrous above, strigose and glabrescent below, the costa more or less plane above, emersed below, the primary lateral veins obscure above, prominulous below, arcuate-ascending, the margin retuse; petiole 1–6 mm. long. Inflorescences borne from the young leafy or bracteate stems, umbelliform, subsericeous, the primary peduncle 1–5 mm. long, the rhachis at most 2 mm. long, the secondary peduncles at most 1 mm. long. Staminate flowers: 5–10 per inflorescence; pedicel about 2 mm. long; calyx tube obconic, about 4.5 mm. long, 1.5–2.0 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes subequal, indefinitely papillate within, about 1.5 mm. long, 1.0–1.5 mm. broad; petals connate into an obscure faucal annulus; antisepalous stamens inserted slightly above the orifice, exserted, the alternisepalous inserted almost two anthers' lengths below the orifice, included, the anthers oblong, 0.75–1.0 mm. long, 0.5 mm. broad, subsessile; disc annular, free, about 0.25 mm. tall, slightly lobed, glabrous; pistillode tenpin-shaped, 1.0–1.5 mm. long, glabrous. Pistillate flowers: 2–3 per inflorescence; pedicel 1–2 mm. long; calyx tube campanulate to suburceolate, about 2 mm. long, 1 mm. broad, puberulent without, glabrous within; calyx lobes subequal, indefinitely papillate within, about 1.5 mm. long, 1.0–1.25 mm. broad; petals connate into an obscure faucal annulus; staminodia 8, papilliform, obscure; disc annular, free, less than 0.25 mm. tall, undulate; pistil 2–3 mm. long, the ovary fusiform to ovoid, glabrous, the style about 1 mm. long, the stigma capitate, exserted. Drupe ellipsoid, 9–10 mm. long, about 4 mm. in diameter, glabrous.

Known to flower in December.

Fig. 21. *Daphnopsis guacacoa*

CUBA: PINAR DEL RÍO: Rangel, *Bro. Alain & Killip 2007* [(♀) MO, US]; San Cristobal, *Wright 2579* [GH (♂ ♀), M (♂ ♀), MO (♂ ♀), NY (♂), P (♂ ♀), S (♂), US (♂)].

The leaves of this species are very similar to those of *D. angustifolia* and *D. cuneata*.

A rather dense fibrous network can be obtained from the bark of this shrub; this network is composed of phloem fibers.

17. *DAPHNOPSIS CRASSIFOLIA* (Poir.) Meissn. in DC. Prod. 14:524. 1857.

Daphne crassifolia Poir. Encycl. Method. Bot. Suppl. 3:316. 1813. [T.: *Nectoux s. n.* (♂)!]

Daphnopsis crassifolia var. *eggersii* Krug & Urb. in Engl. Bot. Jahrb. 15:350. 1892. [T.: *Eggers 2317*]

Hyptiodaphne crassifolia (Poir.) Urb. in Symb. Ant. 2:454. 1901.

Hyptiodaphne crassifolia var. β . *eggersii* (Krug & Urb.) loc. cit. 455. 1901.

Shrubs or trees, the young branches densely ochraceous-hirsute and glabrescent. Leaves approximately whorled by irregular condensation, 3–4 per whorl; leaf blades elliptic to oblanceolate, 3–5 cm. long, 1–2 cm. broad, acute at the apex, cuneate to subauriculate at the base, coriaceous, densely ochraceous-sericeous and glabrescent above and below, the costa plane to immersed above, emersed below, the primary lateral veins obscure above, prominent below, arcuate-ascending; petiole 2–4 mm. long. Inflorescences borne terminally from the young bracteate stems, umbelliform to subracemiform, hirsute, the primary peduncle 10–20 mm. long,

the rhachis about 1 mm. long, the secondary peduncles 3–7 mm. long. Staminate flowers 2–3 per inflorescence; pedicel obsolete; calyx tube tubular to broadly obconic, 9–10 mm. long, 2.0–4.5 mm. broad at the orifice, hirsute without, glabrous within; calyx lobes subequal, indefinitely papillate within, 2.5–4.0 mm. long, 1.5–4.0 mm. broad; petals connate into an obscure faucal annulus; anti-sepalous stamens inserted at the orifice, subexserted, the alternisepalous inserted about 2 anthers' lengths below the orifice, included, the anthers oblong, about 1 mm. long, 0.5 mm. broad, sessile; disc of irregular lobes, free, to 1.5 mm. tall, glabrous; pistillode tenpin-shaped, about 1.5 mm. long, glabrous. Pistillate flowers: 2–3 per inflorescence; pedicel about 1 mm. long; calyx tube more or less tubular, about 6.5 mm. long, 2 mm. broad at the orifice, hirsute without, glabrous within; calyx lobes unequal, indefinitely papillate within, the outer 3–4 mm. long, about 2.5 mm. broad, the inner about 2.5 mm. long, 2 mm. broad; petals connate into an obscure faucal annulus; staminodia 8, papilliform; disc of 4 discrete lobes, free, 1.0–1.25 mm. tall, glabrous; pistil tenpin-shaped, about 4.5 mm. long, the ovary glabrous, the style about 1.5 mm. long, the stigma capitate, included. Drupe not seen.

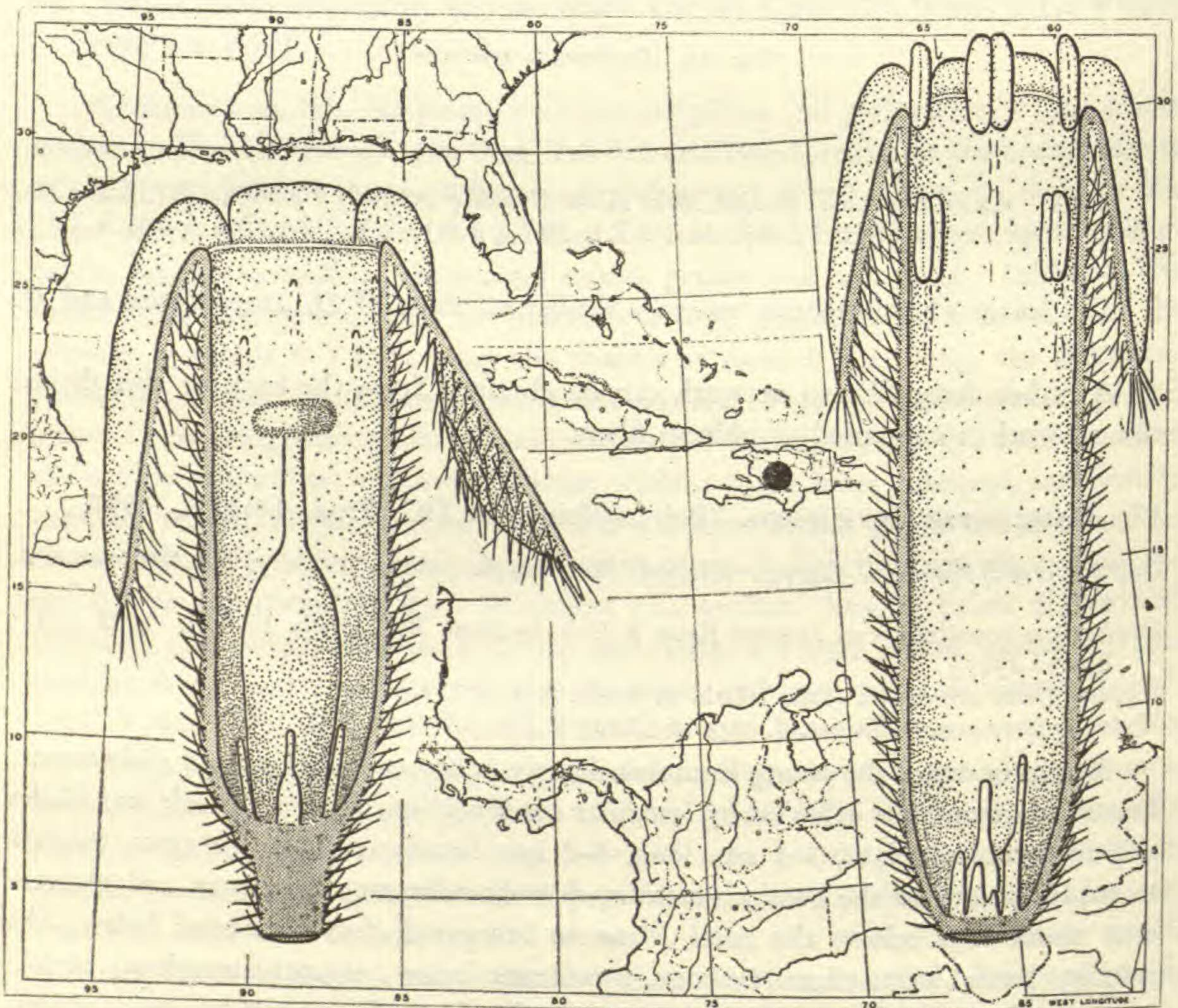


Fig. 22. *Daphnopsis crassifolia*

According to Ekman this species is found on limestone. It flowers from January to May and is reported only from a single altitude, 600 meters.

DOMINICAN REPUBLIC: La Revellue (?), *collector unknown, s. n.* [C (♀)]; without precise locality, *Nectoux s. n.* [P (♂)].

HAITI: ARTIBONITE: Massif du Nord, Hinche, *Ekman 111641* [NY (♂)]. WITHOUT PRECISE LOCALITY: M. des Commissaires, *Holdridge 951* [MO (♀)].

This rare species is known from only a few collections, some of which are fragmentary. The pistillate flowers are rather unusual for the genus because of the included stigma.

The shape of the calyx tube of the staminate flower is rather variable, from tubular to broadly obconic, and appears to be a function of the diameter of the orifice. There appears to be no good reason to recognize varieties on this basis. The same degree of variability is not found in the pistillate flowers.

The irregular condensation of internodes to form leafy whorls at once distinguishes *D. crassifolia* and the following species, *D. philippiana*, from all other species of the genus. Since the flowers are so strikingly different I am inclined to believe that they are not closely related.

18. *DAPHNOPSIS PHILIPPIANA* Krug & Urb. in Engl. Bot. Jahrb. 15:348. 1892.
[T.: *Sintenis 299* (♀)!]

Shrubs or trees to 10 m. tall, the branches glabrescent. Leaves approximately whorled by irregular condensation, 3–6 per whorl, the leaf blades elliptic to oblanceolate, 4.0–13.5 cm. long, 2.0–6.5 cm. broad, acute to subcaudate-acuminate



Fig. 23. *Daphnopsis philippiana*

at the apex, subauriculate at the base, thin-coriaceous, sericeous and glabrescent above and below, the costa plane above, emersed below, the primary lateral veins prominulous above, prominent below, arcuate-ascending, the margin slightly revolute; petiole 3–7 mm. long. Inflorescences borne terminally, generally immediately above the last leaf whorl of last year's growth, umbelliform, with many bud scales at the base, sericeous, the resumption of growth is by the development of the axillary buds of the subtending leaf whorl, these axillary branches continuing vegetative growth or becoming floriferous. Staminate inflorescence with the primary peduncle 1.5–18.0 mm. long, the rhachis about 0.5 mm. long, the secondary peduncles about 1 mm. long. Staminate flowers: 6–7 per inflorescence; pedicel 0.5–1.0 mm. long; calyx tube narrowly to broadly obconic, 3.5–6.5 mm. long, 1.0–2.5 mm. broad at the orifice, sericeous without, glabrous within; calyx lobes subequal, indefinitely papillate within, 1.5–3.0 mm. long, 1.25–2.5 mm. broad; petals connate into an obscure faucal annulus; antisepalous stamens inserted at the orifice, subexserted to exserted, the alternisepalous inserted about two anthers' lengths below the orifice, included, the anthers oblong or suborbicular, 0.5–1.0 mm. long, 0.5 mm. broad, subsessile; disc cupuliform, basally adnate, 0.5–0.75 mm. tall, glabrous, the free margin irregularly lobed; pistillode tenpin-shaped, 0.5–1.0 mm. long, glabrous. Pistillate inflorescence with the primary peduncle 2–14 mm. long, the rhachis about 1 mm. long, the secondary peduncles about 1 mm. long. Pistillate flowers: 7–10 per inflorescence; pedicel about 1 mm. long; calyx tube suburceolate, about 3.5 mm. long, 1.5 mm. broad at the orifice, sericeous without, glabrous within; calyx lobes subequal, indefinitely papillate within, about 1 mm. long, 1 mm. broad; petals connate into an obscure faucal annulus; staminodia 8, papilliform; disc cupuliform, basally adnate, about 0.75 mm. tall, irregularly lobed, glabrous; pistil about 5 mm. long, the ovary ovoid, glabrous, the style 1.5–2.0 mm. long, the stigma capitate, greatly exserted. Drupe ovoid, 8–14 mm. long, about 4 mm. in diameter, glabrous, white.

Apparently restricted to mountainous regions which are well forested. The range is probably becoming increasingly more restricted by agriculture.

Collected at altitudes of 500 to 1000 meters. Flowers from March to late August.

PUERTO RICO: AGUADILLA: Río Maricáo, *Sintenis s. n.* [A (♀)], 299 [A (♂), F (♂), M (♀), MO (♀), NY (♀), US (♀), W (♀)]; Maricáo to Monte Alegrillo, *Britton, Stevens & Hess 2617* [(?) NY, US]. ARECIBO: Mount Morales, near Utuado, *Britton & Marble 1087* [F (♀), NY (♂♀), US (♀)]. HUMACAO: Sierra de Luquillo, *Sintenis s. n.* [A (?)], 1611 [C (♀), P (?), S (?)]; Loma Icaco, *Shafer 3453* [F (?), NY (♂), US (?)]; Río Icaco and adjacent hills, *Shafer 3525* [(♂) F, MO, NY, US]; El Yunque, *Sargent 528* [US (♂)], *Gleason & Cook 441* [NY (♀)]; Barrio de Maizales, *Britton & Hess 2283* [(?) NY, US]; La Mina Basin, *Horn 43* [NY (♂♀)]; Catalina-Yunque trail, Luquillo Mts., *Britton & Bruner 7552* [NY (♂)]; Sierra de Naguabo, *Sintenis 5320* [U (♂)]. PONCE: Monte Cerrote, near Adjuntas, *Britton & Brown 5432* [(♂) A, F, MO, NY, US]; Alto de la Bandera, near Adjuntas, *Britton & Shafer 2100* [(♀) F, NY, US], *Stevens 4631* [NY (?)]; Mount Mandios, near Jayuya, *Britton & Cowell 951* [(♀) F, NY, US]; Las Cruces, near Adjuntas, *Sintenis 4099* [(♀) A, US, W]; about Adjuntas, Guaraguas, *Sintenis 4354* [C (?)]. WITHOUT PRECISE LOCALITY: *Plee s. n.* [P (♀)]; San Narciso, *Britton & Britton 7279* [A (♂), NY (♂), US (?)]; Quebrada Grande to Cuchilla Firme, *Shafer 3588* [F (?), MO (♂), NY (♂), US (♂)].

Known as *majagua de sierra*. The bark is often used for making rope.

There appears to be considerable variation in the size and shape of the staminate calyx tube although the proportions remain relatively constant. Whether the same condition occurs in the pistillate flowers I am unable to say because of the general lack of flowering material. The number of leaves in any whorl is extremely variable even on the same branchlet.

This species is readily distinguishable from all other species except *D. crassifolia* on the basis of the irregularly whorled leaves.

I have chosen *Sintenis 299* (W) as the lectotype.

19. DAPHNOPSIS BRASILIENSIS Mart. & Zucc. in Nov. Gen. & Sp. 1:65. 1824.

[T.: *Martius s. n.* (♂)!]

Daphnopsis dioica Mart. ex Meissn. in Mart. Fl. Bras. 5¹:66. 1895, as syn.

Daphnopsis mello-barretoii Standl. in Field Mus. Publ. Bot. 22:92. 1940. [T.: *Mello Barreto 7556* (♀)!]

Shrubs or trees, the young branches tomentose and glabrescent. Leaf blades elliptic or oblanceolate to obovate, 3–12 cm. long, 1.5–4.0 cm. broad, acute to rotund at the apex, cuneate-attenuate at the base, subcoriaceous, tomentose and glabrescent above, tomentose below, the costa plane above, emersed below, the primary lateral veins prominulous above, prominent below, arcuate-ascending; petiole 3–7 mm. long. Inflorescences borne from the young leafy or bracteate stems, umbelliform. Staminate inflorescence with the primary peduncle 0.5–1.5

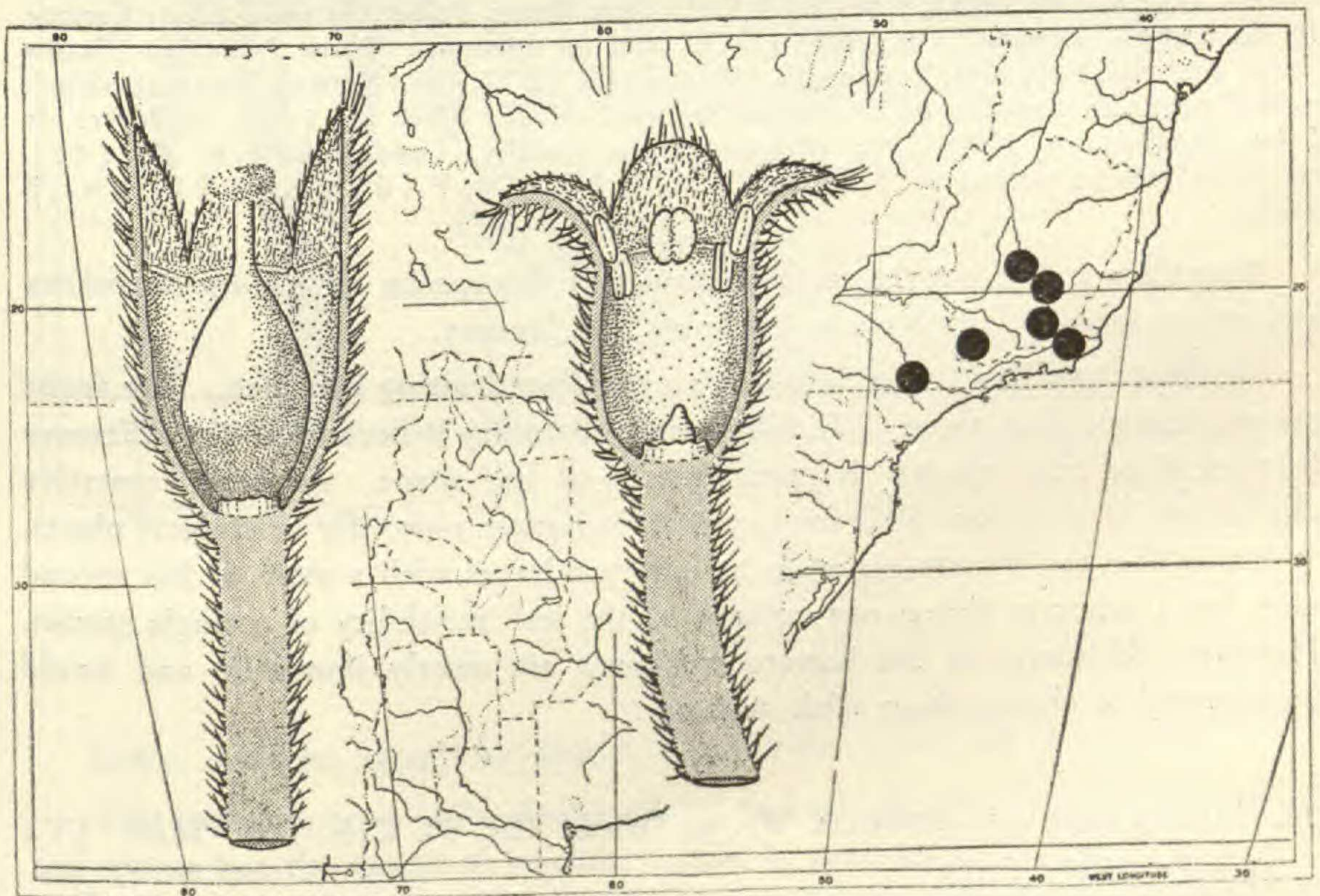


Fig. 24. *Daphnopsis brasiliensis*

cm. long, the rhachis 1–2 mm. long, the secondary peduncles 0.5–2.0 mm. long. Staminate flowers: 15–50 per inflorescence; pedicel 2.5–3.0 mm. long; calyx tube subcampanulate to campanulate, 2.0–2.5 mm. long, ca. 1.5 mm. broad at the orifice, tomentose without, glabrous within; calyx lobes unequal, puberulent within, the outer about 1.5 mm. long, 1 mm. broad, the inner 1 mm. long, 1.5 mm. broad; petals connate into an obscure faucal annulus; antisepalous stamens inserted at the orifice, subexserted, the alternisepalous inserted just below the orifice, included, the anthers suborbicular, about 0.5 mm. long and broad, sessile; disc annular, free, about 0.25 mm. tall, undulate, glabrous; pistillode bottle-shaped, about 0.5–1.0 mm. long, glabrous. Pistillate inflorescence with the primary peduncle 3–5 mm. long, the rhachis about 1 mm. long, the secondary peduncles 0.5–1.0 mm. long. Pistillate flowers: 2–5 per inflorescence; pedicel 1–3 mm. long; calyx tube campanulate, about 2.5 mm. long, 1.5–2.0 mm. broad at the orifice, tomentose without, glabrous within; calyx lobes unequal, puberulent within, the outer about 1.5 mm. long and broad, the inner 0.75 mm. long, 1 mm. broad; petals connate into an obscure faucal annulus; staminodia 8, papilliform; disc annular, free, about 0.25 mm. tall, undulate, glabrous; pistil 3.0–3.5 mm. long, the ovary ovoid, glabrous, the style about 0.75 mm. long, the stigma capitate, exserted. Drupe ovoid to ellipsoid, 9–11 mm. long, 5–7 mm. in diameter, glabrous.

BRASIL: MINAS GERAES: Caldas, *Mosén 1930* [S (♀)], *994* [P (♂), S (♂♀)]; *Regnell II 127 1/2* [C (♀), F (♂), M (♀), P (♂♀), S (♂), U (♀), US (♀)], *141a* [R (♀)]; Cambuquira, *Barreto 7557* [(♂) F, R]; Bello Horizonte, *Barreto 7556* [F (♀)]; Regod'-Aga, between Aijuruoca & Cachamléu, *Glaziou 16318* [C (♀), P (♂)]; around Rio Paraopeba, *Warming 730* [C (♀)]; Contendas, *Martius s. n.* [M (♂)]; without precise locality, *Martius s. n.* [M (♂)], *Widgren 223* [S (♂)], *1004* [GH (♂), S (♂♀), US (♀), W (♂)], *s. n.* [S (♂♀)]; Ouro Brana, *Porto 474* [MO (?)]; Congon La do Campos, *Damazio s. n.* [MO (♂)]. RIO DE JANEIRO: Nova Friburgo, *Glaziou 17201* [(♂) C, F, P, US]; Teresopolis, *Ule 4289* [R (♂)]. SÃO PAULO: Serra da Mantiqueira, terras do Cruzeiro do Sr. Major Novaes, *Saldanha 8868* [R (♂)]; in Morro do Lobo, *Martius s. n.* [M (♂)]; without precise locality, *Gaudichaud s. n.* [P (♂)]. WITHOUT PRECISE LOCALITY: *Sello 264* [C (♂), NY (♀), P (♂), US (♂♀)], *s. n.* [B (♂)].

According to Barreto the common names of this species are *embira toicinheira* and *embira amarella*. Flowers in December and January.

Daphnopsis mello-barretoii Standley is a pistillate fruiting specimen. The fruits are not distinct from those of *D. brasiliensis*. Standley believes that the difference between these two "species" is primarily one of leaf shape. At best, vegetative characteristics are a poor basis for species delimitation, especially in tropical plants. It is true that the Barreto specimen has obovate leaves with a more or less rotund apex but I interpret this as one extreme of the leaf variability of a single species. However, the leaves of the Barreto specimens are mostly immature and would be expected to change shape with maturity.

20. *DAPHNOPSIS ANGUSTIFOLIA* Wr. ex Griseb. Cat. Pl. Cub. 110. 1866. [T.: *Wright 2580* (♂)!]

Shrubs to 1 m. tall, the young branches glabrous. Leaf blades obovate or

oblanceolate, 1.0–2.5 cm. long, 0.3–0.6 cm. broad, acute to obtuse at the apex, cuneate at the base, glabrous above and below, the costa plane above, emersed below, the primary lateral veins obscure above and below, margin revolute; petiole 2–3 mm. long. Inflorescences borne from the young leafy stems, umbelliform, the primary peduncle less than 0.25 mm. long, the rhachis about 0.25 mm. long, the secondary peduncles 0.25 mm. long. Staminate flowers: 2–4 per inflorescence; pedicel 1–2 mm. long; calyx tube obconic, 2–3 mm. long, about 1.5 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes subequal, puberulent within, 1.5 mm. long, 0.5–0.75 mm. broad; petals connate into an obscure faucal annulus; antisepalous stamens inserted immediately above the orifice, subexserted, the alternisepalous inserted less than two anthers' lengths below the orifice, included, the anthers oblong, 0.5–0.75 mm. long, 0.5 mm. broad, sessile; disc annular, free, about 0.25 mm. tall, undulate, glabrous; pistillode tenpin-shaped, 0.75 mm. long, glabrous. Pistillate flowers and fruit not seen.



Fig. 25. *Daphnopsis angustifolia*

CUBA: ORIENTE: versus Pinal Mayari, Wright 2580 [(♂) A, M, MO, NY, P].

This species appears to be closely related to both the preceding and the following species but the extent of relation cannot be accurately determined because of lack of pistillate material. The principal reason I have maintained *D. angustifolia* as a species distinct from *D. cuneata* is the presence of the free, annular disc.

21. *DAPHNOPSIS CUNEATA* (Griseb.) Radlk. in Sitzb. Acad. Muenchen 14:489. 1884.

Bumelia cuneata Griseb. Cat. Pl. Cub. 164. 1866. [T.: *Wright 2020* (♀)!] not Swartz.

Shrubs or small trees, the young branches glabrous. Leaf blades ovate or elliptic to obovate, 1–11 cm. long, 1–6 cm. broad, rotund to acute at the apex, cuneate at the base, subcoriaceous to coriaceous, glabrous above and below, the costa plane above, emersed below, the primary lateral veins prominulous above and below, revolute; petiole to 5 mm. long. Inflorescences borne terminally from the young leafy stems or sometimes from an axillary brachyblast, umbelliform, minutely puberulent, the primary peduncle 0.25–3.0 mm. long, the rhachis about 0.25 mm. long, the secondary peduncles less than 0.25 mm. long. Staminate flowers: 1–5 per inflorescence; pedicel 1–5 mm. long; calyx tube more or less narrowly obconic, 2.5–4.5 mm. long, 1.0–1.5 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes subequal, minutely puberulent within, about 1.5 mm. long, 1.25–1.5 mm. broad; petals connate into an obscure faucal annulus; antisepalous stamens inserted at the orifice, subexserted, the alternisepalous inserted about two anthers' lengths below the orifice, included, the anthers oblong, 0.5–1.0 mm. long, 0.5 mm. broad, sessile; disc annular, basally adnate, undulate, glabrous; pistillode tenpin-shaped, 1.0–1.5 mm. long, glabrous. Pistillate flowers: 3–4 per inflorescence; pedicel 1–2 mm. long; calyx tube suburceolate, 2.5–3.0 mm. long, 1.0–1.5



Fig. 26. *Daphnopsis cuneata*
Large dots: ssp. *cuneata*, small dots: ssp. *uniflora*.

mm. broad at the orifice, puberulent without, glabrous within; calyx lobes subequal, puberulent within, 1.5 mm. long, 0.5–0.75 mm. broad; petals connate into an obscure faucal annulus; staminodia absent; disc completely adnate; pistil 2–3 mm. long, the ovary ovoid, glabrous, the style about 1 mm. long, the stigma capitate, exserted. Drupe ovoid, about 10 mm. long, 5 mm. in diameter, white.

Specimens of this species are often festooned with lichens and epiphytic bromeliads.

KEY TO THE SUBSPECIES

- a. Primary peduncle to 2 mm. long; staminate flowers 3–5 per inflorescence, the calyx tube narrowly obconic, to 3.5 mm. long. Plants of Cuba.....21a. *D. CUNEATA CUNEATA*
 aa. Primary peduncle to 3 mm. long; staminate flowers 1 per inflorescence, the calyx tube obconic, to 4.5 mm. long. Plants of Haiti.....21b. *D. CUNEATA UNIFLORA*

21a. *DAPHNOPSIS CUNEATA* ssp. *CUNEATA*

Plants of Cuba, found at altitudes of 800–1300 meters.

CUBA: ORIENTE: Loma Cardero, S. Maestra, *Roig & Bucher 666* [NY (s)], *6904* [NY (s)]; S. Maestra, on the water divide between Río Yara and Río Palmamocha, *Ekman 14432* [S (♀)]; near Palua Mocha peak, *Bro. León 10900* [NY (s)], *10901* [NY (s)]; between Punta de Palmamocha and Pico Turquino, *Ekman 2554* [S (s)]; Loma Barbi, *Ekman 15649* [(♀) NY, S]; north slope of Punta de Palmamocha, *Ekman 14298* [K (?), S (s)]; Monte Libanon, near Monterus, *Ekman 14833* [S (s)]; Sierra de Nipe, in "carra scales" around Río Pilato, *Ekman 2726* [(s) NY, S]; Farallones, *Wright 2920* [(♀) GH, M, MO, NY, P]; Sierra de Imais, Puntón de Mate, *Bro. León 12220* [MO (?), NY (♂)].

This subspecies is rather variable, particularly in leaf size and to lesser degree in leaf shape. The type specimen is small-leaved and the internodes are extremely short; on the other hand a large number of specimens are rather large-leaved and have very long internodes. Whether these differences are due to edaphic factors or are manifestations of juvenile form is impossible to determine from herbarium specimens. With the specimens cited above, a complete transition series between the small-leaved and large-leaved plants can be demonstrated. The specimens with large leaves have been confused with the genus *Lagetta*. Bro. Alain,¹² discussing this genus in Cuba, says, "Una serie de ejemplares estériles de la Sierra Maestra (*León 10900 y 10901; Roig & Bucher 6666 y 6904; Acuña 9874 y 15160*) pertenecen proplamente a una especie no descrita de este género." Critical collections of Ekman, deposited at Stockholm, have yielded both staminate and pistillate flowers. These flowers were practically identical with those of the type specimen except in size. More important, however, is that they did not have the long-haired ovary or peculiar stigma that typify the genus *Lagetta*.

21b. *DAPHNOPSIS CUNEATA* ssp. *uniflora* (Urb. & Ekm.) Nevl. comb. & stat. nov.

Daphnopsis uniflora Urb. & Ekm. in *Arkiv. Bot.* 21a⁵:16. 1927. [T.: *Ekman H4584* (♂)!]

Plants of Haiti, known only from the type collection. Collected in flower in August at 1000 meters.

¹² *Flora de Cuba* 3:385. 1953.

HAITI: NORD-OUEST: Port de Paix, Haut-Piton, *Ekman H4584* [S (♂), US (s)].

The floral morphology of the staminate flower agrees essentially with that of *D. cuneata* ssp. *cuneata* and there seems to be no good reason to maintain both as species.

22. *DAPHNOPSIS AMERICANA* (Mill.) J. R. Johnston, in *Contrib. Gray Herb.* n. s. 34:242. 1909; Urban in *Arkiv. für Botan.* 17⁷:44. 1921, made as a new combination but improperly so; Fawcett & Rendle, in *Journ. Bot.* 63:51. 1925, made as a new combination but improperly so.

Laurus americana Mill. *Dict.* ed. 8, no. 10. 1768. [T.: *Houston s. n.*]

Shrubs or trees to 15 m. tall, the young branches ochraceous-tomentellose or sericeous and glabrescent. Leaf blades lanceolate, oblong-elliptic, elliptic, oblanceolate or obovate, 3–21 cm. long, 1–8 cm. broad, blunt to acute, acuminate or subcaudate-acuminate at the apex, cuneate at the base, thin-coriaceous, sericeous to glabrescent above and below, the costa plane above, emersed below, the primary lateral veins prominulous to prominent above and below, arcuate-ascending; petiole 2–10 mm. long. Inflorescences borne from the young portions, simple or dichotomously proliferated, when simple the resumption of vegetative growth through a precocious terminal bud coordinate with the inflorescence, when dichotomously proliferated the resumption of vegetative growth through a subordinate axillary bud, dichotomies 1 to 9, subsericeous, umbelliform to subracemiform. Staminate inflorescence with the primary peduncle 2–45 mm. long, the rhachis 1–8 mm. long, the secondary peduncles 0.5–3.0 mm. long. Staminate flowers: 8–75 per inflorescence; pedicel 1.5–8.5 mm. long; calyx tube more or less tubular, sometimes somewhat inflated basally, 2–5 mm. long, 1–2 mm. broad at the orifice, strigillose to puberulent without, glabrous within; calyx lobes subequal, puberulent within, 1.0–2.5 mm. long and broad; petals connate into an obscure faucal annulus; anti-sepalous stamens inserted slightly above the orifice to about an anther's length above, exserted, the alternisepalous inserted at the orifice, included to subexserted, the anthers suborbicular to oblong, 0.5–1.0 mm. long, 0.5–0.75 mm. broad, sessile or subsessile; disc annular to cupuliform, basally to completely adnate, irregularly short-lobed, glabrous; pistillode obovoid or tenpin-shaped, 1–2 mm. long, glabrous or minutely setose towards the apex. Pistillate inflorescence with the primary peduncle 2–30 mm. long, the rhachis 1–3 mm. long, the secondary peduncles 0.25–1.0 mm. long. Pistillate flowers: 10–30 per inflorescence; pedicel 0.5–7.0 mm. long; calyx tube obconic, campanulate, suburceolate or urceolate, 1.5–2.5 mm. long, 1.0–1.5 mm. broad at the orifice, strigillose or puberulent without, glabrous within; calyx lobes subequal, puberulent within, 1.0–1.5 mm. long, 0.75–1.5 mm. broad; petals connate into an obscure faucal annulus; staminodia 8, papilliform or bearing poorly developed anthers; disc annular to cupuliform, basally to completely adnate, irregularly short-lobed, glabrous; pistil 1–3 mm. long, the ovary ovoid, glabrous, the stigma capitate, included or exserted. Drupe more or less ovoid, 6–15 mm. long, 3–9 mm. in diameter, glabrous.

This is the most widespread species of the genus; it is found in Central Amer-

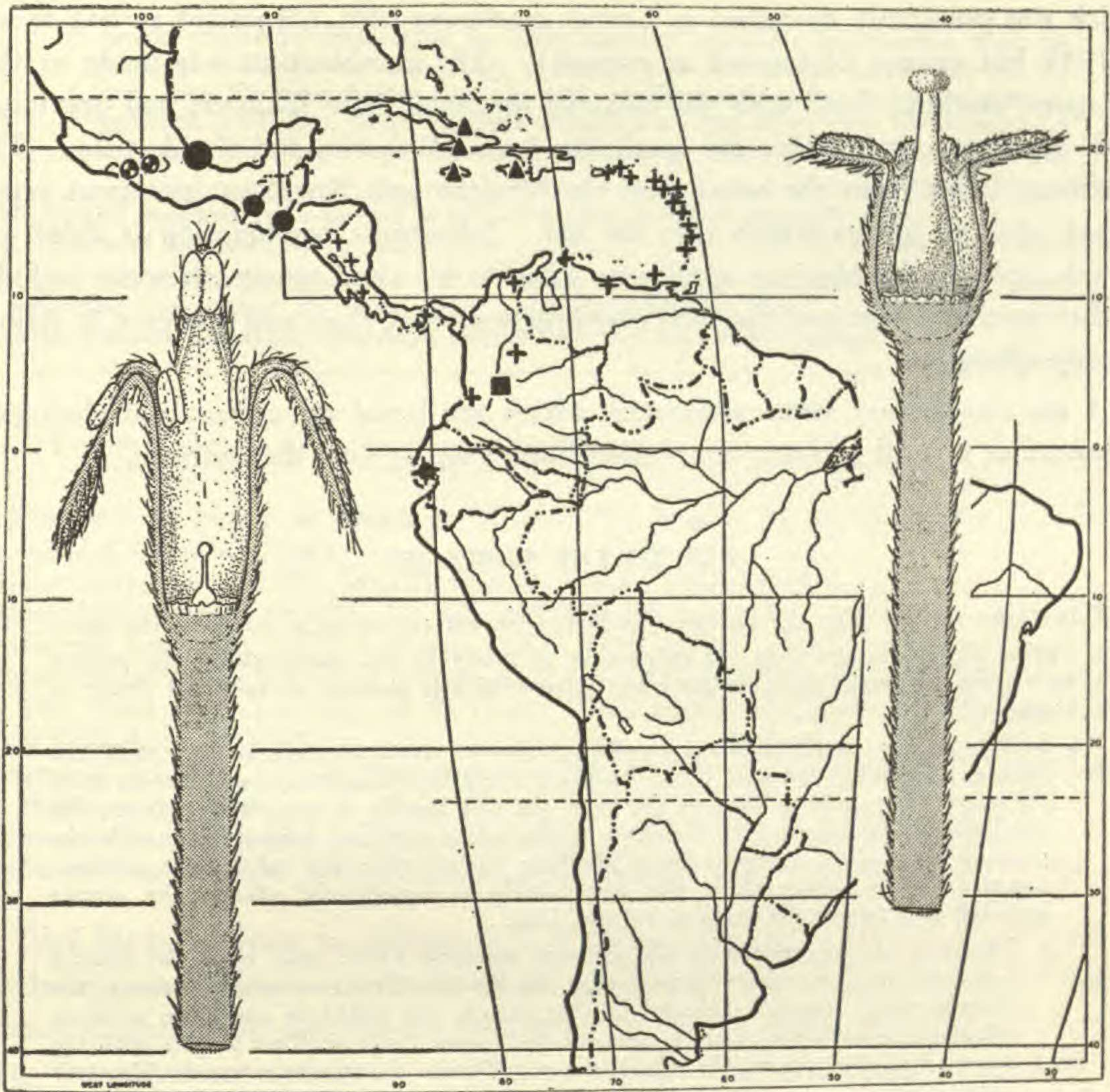


Fig. 27. *Daphnopsis americana*

Solid dots: ssp. *americana*, checkered dots: ssp. *salicifolia*, dots with superimposed diagonal lines: ssp. *guatemalensis*, dots with superimposed crosses: ssp. *ecuadorensis*, squares: ssp. *cestrifolia*, triangles: ssp. *tinifolia*, crosses: ssp. *caribaea*.

ica, northern South America and in the Greater and Lesser Antilles. The plants are generally associated with rivers, streams or other very moist habitats such as cloud forests. They show a pronounced preference for soils which are volcanic in origin.

The species is extremely variable and, as a result, has a large and complex synonymy. A large number of specimens are now available and a general reorganization is possible.

Urban's new combination, *D. americana* (Mill.) Urb., was made with the intention of including specimens from Jamaica and Hispaniola. Later, Fawcett and Rendle discussed some of the taxonomic confusion in the species and added to that confusion with a new combination. The new combination, *D. americana* (Mill.) Fawcett & Rendle, was based on the Houston specimen from Veracruz

which was previously described as *Laurus americana* Mill. (deposited at BM as late as 1925 but cannot be located at present). The combination was made so that the name would be fixed with the Mexican specimen since Johnston had previously made the same combination for specimens from Margarita and the Antilles. This confusion stems from the belief that the Mexican and Antillean specimens represented separate species which they do not. Johnston's combination is valid and would apply to the Mexican specimens whether his cited specimens were included in that species or not and the later combinations of Urban and Fawcett & Rendle are superfluous.

I am recognizing seven subspecies which are based on certain morphological disjunctions as well as some less well-defined geographical disjunctions.

KEY TO THE SUBSPECIES

- a. Calyx tube shorter than the pedicel; pistillode glabrous or minutely setose at the apex.
- b. Pedicel slightly longer than the calyx tube or rarely in *ssp. guatemalensis* the pedicel to 3 times as long as the pistillate calyx tube; pistillode glabrous or minutely setose at the apex.
- c. Leaves obovate to oblanceolate or oblong-elliptic; staminate inflorescence with the primary peduncle 4–35 mm. long, the rhachis 1–8 mm. long; staminate flowers with the calyx lobes never as long as the tube, the disc basally to completely adnate, the pistillode glabrous or minutely setose at the apex; pistillate inflorescence with the primary peduncle 2–25 mm. long; pistillate flowers with the calyx tube obconic, campanulate or suburceolate, the disc basally to completely adnate, the stigma included or exserted, the drupe 8–14 mm. long.
- d. Staminate inflorescence with the primary peduncle 11–33 mm. long, the rhachis 1–4 mm. long; staminate flowers with the disc basally to completely adnate, the alternisepalous stamens included to subexserted, the pistillode glabrous; pistillate inflorescence with the primary peduncle 8–25 mm. long; pistillate flowers with the calyx tube suburceolate, the staminodia papilliform, the stigma exserted. Plants of eastern Mexico.....22a. *D. AMERICANA AMERICANA*
- dd. Staminate inflorescence with the primary peduncle 2–35 mm. long, the rhachis 1–8 mm. long; staminate flowers with the disc basally adnate, the alternisepalous stamens subexserted, the pistillode glabrous or minutely setose at the apex; pistillate inflorescence with the primary peduncle 2–18 mm. long; pistillate flowers with the calyx tube obconic or campanulate, the staminodia bearing poorly developed anthers, the stigma included.
- e. Staminate inflorescence with the primary peduncle 4–17 mm. long, the rhachis 2–8 mm. long; staminate flowers with the anthers oblong, the pistillode glabrous; pistillate inflorescence with the primary peduncle 3–15 mm. long; pistillate flowers with the calyx tube obconic, the disc completely adnate. Plants of central and western Mexico.....22b. *D. AMERICANA SALICIFOLIA*
- ee. Staminate inflorescence with the primary peduncle 2–35 mm. long, the rhachis 1–2 mm. long; staminate flowers with the anthers suborbicular, the pistillode minutely setose at the apex; pistillate inflorescence with the primary peduncle 2–18 mm. long; pistillate flowers with the calyx tube campanulate, the disc basally adnate. Plants of Colombia.....22c. *D. AMERICANA CESTRIFOLIA*
- cc. Leaves elliptic to oblanceolate or rarely obovate; staminate inflorescence with the primary peduncle 8–30 mm. long, the rhachis 1–2 mm. long; staminate flowers with the calyx lobes shorter than the calyx tube or sometimes as long or longer, the disc basally adnate, the pistillode glabrous; pistillate inflorescence with the primary peduncle 4–30 mm. long; pistillate flowers with the calyx tube campanulate to urceolate, the disc basally adnate, the stigma exserted, the drupe 7–15 mm. long.
- f. Leaves elliptic to oblanceolate; staminate inflorescence with the primary peduncle 11–14 mm. long; staminate flowers with the calyx tube about 2 mm. long, the lobes sometimes as long as the tube or longer; pistillate inflorescence with the primary peduncle 4–30 mm. long; pistillate flowers with the calyx tube campanulate, the drupe 9–10 mm. long. Plants of southern Mexico and Guatemala.
.....22d. *D. AMERICANA GUATEMALENSIS*

- ff. Leaves elliptic to oblanceolate or rarely obovate; staminate inflorescence with the primary peduncle 8–30 mm. long; staminate flowers with the calyx tube 3.5–4.5 mm. long, the lobes shorter than the tube; pistillate inflorescence with the primary peduncle 6–21 mm. long; pistillate flowers with the calyx tube suburceolate to urceolate, the drupe 7–15 mm. long. Plants of Cuba, Jamaica and Hispaniola.
.....22e. *D. AMERICANA TINIFOLIA*
- bb. Pedicel regularly twice as long as the calyx tube; pistillode minutely setose at the apex. Plants of Ecuador.....22f. *D. AMERICANA ECUADORENSIS*
- aa. Calyx tube longer than the pedicel or sometimes in material from Costa Rica the pedicel somewhat longer than the calyx tube; pistillode glabrous. Plants of Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Puerto Rico and the Lesser Antilles.....
.....22g. *D. AMERICANA CARIBAEA*

22a. *DAPHNOPSIS AMERICANA* ssp. *AMERICANA*

- Daphne obovata* Humb. & Bonpl. ex Wikstr. Diss. Daphn. ed. 2. 40. 1820. [T.: *Humboldt & Bonpland 7549*]
Daphne bonplandiana HBK. Syn. Pl. Aequin. 1:447. 1822, ex char.
Daphne lagetto Bonpl. ex HBK. loc. cit. 1822, as syn.
Daphnopsis bonplandii (HBK.) Meissn. in DC. Prod. 14:521. 1857, ex char.
Hargasseria mexicana Schiede & Deppe, ex C. A. Meyer, in Bull. Acad. St. Petersburg 1: 356. 1843; Ann. Sci. Nat. ser. II. 20:51. 1843, (based on *Daphne bonplandiana* Cham. & Schlecht. not HBK.).
Hargasseria schiedeana Endl. Gen. Suppl. 4²:68. 1847, (based on *Daphne bonplandiana* HBK.).
Daphnopsis lindenii Meissn. in DC. Prod. 14:523. 1857. [T.: *Linden 95 (♀)*!]
Daphnopsis bonplandiana (HBK.) Standl. in Contrib. U. S. Nat. Herb. 23:1013. 1924.

Leaf blades obovate to oblanceolate or oblong-elliptic, 3–11 cm. long, 1.0–3.5 cm. broad, rounded to acute at the apex; petiole 3–6 mm. long. Staminate inflorescence umbelliform, the primary peduncle 11–33 mm. long, the rhachis 1–2 mm. long, the secondary peduncles to 0.5 mm. long. Staminate flowers: 10–20 per inflorescence; pedicel 4–7 mm. long; calyx tube narrowly obconic, 2.5–5.0 mm. long, 1.5–2.0 mm. broad at the orifice; calyx lobes 1.5–2.5 mm. long, 1.0–1.5 mm. broad; antisepalous stamens inserted to an anther's length above the orifice, the alternisepalous inserted at the orifice, subexserted to included, the anthers oblong, 0.5–0.75 mm. long, about 0.5 mm. broad, sessile; disc basally to completely adnate, about 0.5 mm. tall, the margin when free irregularly short-lobed, glabrous; pistillode tenpin-shaped, 1.0–1.5 mm. tall, glabrous. Pistillate inflorescence, umbelliform, the primary peduncle 8–25 mm. long, the rhachis 1–2 mm. long, the secondary peduncles to 0.5 mm. long. Pistillate flowers: 8–14 per inflorescence; pedicel 3.0–6.5 mm. long; calyx tube suburceolate, 2.0–2.5 mm. long, about 1 mm. broad at the orifice; calyx lobes 1.0–1.25 mm. long, 0.75–1.0 mm. broad; staminodia 8, papilliform; disc as in staminate flowers; pistil about 3 mm. long, the stigma exserted.

This subspecies is apparently restricted to eastern Mexico where it flowers from January to June.

MEXICO: VERACRUZ: Veracruz, *Orcutt 3395* [(♀) F, MO, US], *Purpus 8742* [(♂) BM, US], *Humboldt & Bonpland 4487* [P (♀)], *1746* [F (?), P (♂)], *Müller 33* [NY (♂ ♀)], *Gouin s. n.* [P (♂ ♀)], *Wawra 682* [W (♂)]; Zacuapan, *Purpus 3730* [(♀) A, F, MO, NY, US], *5992* [(♀) A, NY, US], *10677* [M (♂), S (♂ ♀), US (♀)], *15432* [F (♂)]; along Río de Los Pescados, *Purpus 13070* [(♂) A, F]; Medellin, *Wawra 39* [W (♀)]; banks of creek, Puente Nacional, *Purpus 10677^{bis}* [C (♂ ♀), MICH (♀)],

10766 [(♂) A, F]; Tlacotalpam, *Nelson* 503 [US (♂)]; El Mirador, *Purpus* 15332 [MICH (♂)], 16217 [(♂) A, F], *Linden* 95 [NY (fragment ♀)], *Liebmann* 4291 [(♂) C, F], 4292 [(♀) C, F US], 14837 [(♂) C, F, GH, MO, US]; without precise locality, *Habn s. n.* [P (♀)], *Schiede & Deppe* 86 [(♀) MO, US, W], *s. n.* [(♀) M, NY], *Galeotti* 523 [(♂) P, W], 524 [(♂) P, W].

This subspecies has a rather confused synonymy which was precipitated by a failure to communicate adequately the circumscription of the names concerned. Thus Wikstroem described a doubtful species *Daphne obovata* based on a Humboldt and Bonpland specimen. Two years later Humboldt, Bonpland and Kunth described a new species, *Daphne bonplandiana*, under which they placed *Daphne obovata* as a synonym and then fixed the type specimen of that epithet as *Humboldt & Bonpland* 7549. *Daphne lagetto* Bonpland was also published at this time as a synonym. Meissner, in 1857, made the appropriate shift of the epithet into *Daphnopsis*. Meyer then described *Hargasseria mexicana* based on *Daphne bonplandiana* Cham. & Schlecht. of which I can find no record except as a manuscript name. *Hargasseria schiedeana* was described in 1847 and was based on *Daphne bonplandiana* HBK. and requires no comment. Meissner's description of a new species, *Daphnopsis lindenii*, literally opened the floodgates of error. This species was based on *Linden* 95 which Meissner stated as having been collected in Mirades District. Modern collectors i.e., since 1900, unable to find this location and emboldened with the knowledge that the description was very broad, applied the name wholesale to specimens from Mexico and Guatemala, especially to *D. ficina*. It is clear that one of two possible "accidents" has occurred: either a typesetting error was made or Meissner misread the collection place of *Linden* 95. It is clearly Mirador not Mirades. El Mirador is a finca at which few botanists of the time failed to stop for varying periods; it is on the road between Huatusco and Jalapa Enriquez.¹³ Standley's combination requires no comment other than to mention that it was improper.

This subspecies shows considerable variation, particularly in leaf shape. Although specimens are too few to make any concrete conclusions, it appears as though specimens collected at Veracruz generally have obovate leaves while those collected farther inland become progressively oblanceolate to oblong-elliptic.

Some confusion may be found among certain *Purpus* collections. *Purpus* 10677 is composed of two collections: those collected at Zacuapan in 1927 and those collected on the banks of a creek at Puente Nacional, in 1932.

22b. *DAPHNOPSIS AMERICANA* ssp. *salicifolia* (HBK.) Nevl. comb. & stat. nov.

Daphne salicifolia HBK. Nov. Gen. 2:150. 1817. [T.: *Humboldt & Bonpland s. n.* !]

Daphne elaeagnoides Humb. & Bonpl. ex Wikstr. Diss. Daphn. ed. 2. 40. 1820. [T.: *Humboldt* 7551 !]

Daphne mexicana Spreng. Syst. 2:236. 1825, (based on *Daphne salicifolia* HBK.)

Hargasseria salicifolia (HBK.) Endl. Gen. Suppl. 4²:68. 1847.

Daphnopsis salicifolia (HBK.) Meissn. in DC. Prod. 14:522. 1857.

¹³ Information supplied by Dr. Robert Dressler.

Leaf blades oblong-elliptic or elliptic to oblanceolate to rarely obovate, 3–18 cm. long, 1.0–4.5 cm. broad, acute at the apex; petiole 3–5 mm. long. Staminate inflorescence umbelliform to subracemiform, the primary peduncle 4–17 mm. long, the rhachis 2–8 mm. long, the secondary peduncles to 0.5 mm. long. Staminate flowers: 8–35 per inflorescence; pedicel 3–6 mm. long; calyx tube narrowly obconic, slightly inflated at the base, 2.5–4.0 mm. long, 1.0–1.5 mm. broad at the orifice; calyx lobes 1.5–2.5 mm. long, 1.0–1.5 mm. broad; antisepalous stamens inserted just above the orifice, the alternisepalous inserted at the orifice, subexserted, the anthers oblong, 0.5–0.75 mm. long, 0.5 mm. broad, sessile; disc basally adnate, about 0.5 mm. tall, irregularly lobed, glabrous; pistillode tenpin-shaped, 1–2 mm. long, glabrous. Pistillate inflorescence umbelliform to subracemiform, the primary peduncle 3–15 mm. long, the rhachis 1–3 mm. long, the secondary peduncles to 0.5 mm. long. Pistillate flowers: seen only in material from Morelos State; 8–15 per inflorescence; pedicel 0.5–6.0 mm. long; calyx tube obconic, 1.5–2.0 mm. long, about 1 mm. broad at the orifice; calyx lobes 1.0–1.5 mm. long, about 1 mm. broad; staminodia 8, with poorly developed anthers, the antisepalous anthers less developed than the alternisepalous, subsessile; disc completely adnate; pistil 1–2 mm. long, the stigma included. Drupe ovoid, 10–14 mm. long, 5–9 mm. in diameter, white.

Flowers from February through July at altitudes of 500–1000 meters.

MEXICO: GUERRERO: Carreteras, *Hinton 10099* [(♂) GH, MICH, MO, NY, S, U, US]; Vallecitos, *Hinton 10246* [(♂) GH, MICH, MO, NY, US], *10268* [(♀) A, MICH, MO, NY, US]. MÉXICO: Tejupilco, *Hinton 4062* [(♀) A, F, MICH, NY, U, US]; Platanal, *Hinton 3348* [(♂) A, F, S, US]; Acatitlán, *Hinton 3173* [(♂) A, F, NY, S, US]; Tenayac, *Hinton 3313* [(♂) A, US], *4016* [(♀) A, NY, US]. MORELOS: hillsides near Cuernavaca, *Pringle 6328* [A (♂ ♀), F (♂ ♀), M (♀), MO (♀), NY (♀), P (♀), S (♀), US (♂ ♀), W (♀)], *Humboldt & Bonpland s. n.* [F (fragment), P (?)], *Rose, Painter & Rose 10240* [US (♀)]; Salto San Antón, *Lyonnet 346* [(♂) MO, US], *Woronow 2602* [F (♂)], *2727* [F (♂)]; Huanta (?), *Schiede s. n.* [S (♀)]; Xuchicalio (?), *Hahn s. n.* [P (♀)]; Dos Tetecos, *Arsène s. n.* [US (♂)]; Chapultepec, *Williams 3801* [A (♀)]; Xachitepec, *Lyonnet 1488* [A (♂)]; Arlocommlio (?), *Ehrenberg s. n.* [US (♂)]. WITHOUT PRECISE LOCALITY: *Humboldt 7551* [NY (?)].

Known as *cuco* and *manea de torro*.

The specimens from Morelos are rather constant and are identified by their oblong-elliptic, salicaceous leaves. The pistillate flowers are quite conspicuous by their small size but especially by the presence of poorly developed anthers! These flowers are without doubt functionally pistillate since some of them bear fruit. Unfortunately, I have been unable to find pistillate flowers from the states of México or Guerrero.

Some of the staminate specimens show a definite tendency for the primary rhachis to elongate. This condition reaches a climax in *Hinton 10246* (MO) but can be found in any number of specimens.

The inflorescences are generally simple though some of the specimens from Guerrero show the tendency to proliferate dichotomously.

22c. *DAPHNOPSIS AMERICANA* ssp. *cestrifolia* (HBK.) Nevl. comb. & stat. nov.

Daphne cestrifolia HBK. Nov. Gen. 2:150. 1817. [T.: *Hartweg 1367* (♀)!]

Hargasseria cestrifolia (HBK.) Endl. Gen. Suppl. 4²:68. 1847.

Daphnopsis cestrifolia (HBK.) Meissn. in DC. Prod. 14:523. 1857.

Leaf blades elliptic to oblanceolate, 3–11 cm. long, 1.5–3.0 cm. broad, acute at the apex; petiole 2–4 mm. long. Staminate inflorescence umbelliform or sometimes subracemiform, the primary peduncle 2–35 mm. long, the rhachis 1–2 mm. long, the secondary peduncles about 0.5 mm. long. Staminate flowers: 14–30 per inflorescence; pedicel 4–6 mm. long; calyx tube narrowly obconic, 3.5–4.5 mm. long, 1.0–1.5 mm. broad at the orifice; calyx lobes about 2.5 mm. long, 1 mm. broad; antisepalous stamens inserted about an anther's length above the orifice, the alternisepalous inserted at the orifice, subexserted, the anthers suborbicular, 0.75 mm. long, 0.5 mm. broad, sessile; disc basally adnate, to 0.5 mm. tall, irregularly lobed; pistillode tenpin-shaped, about 2 mm. long, minutely setose at the apex. Pistillate inflorescence umbelliform, the primary peduncle 2–18 mm. long, the rhachis 1–2 mm. long, the secondary peduncles to 0.5 mm. long. Pistillate flowers: based on a single flower: 10 per inflorescence; pedicel 3–4 mm. long; calyx tube campanulate, about 3 mm. long, 1.5 mm. broad at the orifice; calyx lobes about 1.5 mm. long and broad; staminodia 8, with poorly developed anthers; disc basally adnate, irregularly lobed; pistil 2.5 mm. long, the style 1 mm. long, the stigma included. Drupe ovoid, 9–11 mm. long, 5–7 mm. in diameter.

COLOMBIA: CALDAS: Caldas on Ambalema-Ibagué rr., *Haught 2380* [F (♂)]. CUNDINAMARCA: Guaduas, *Karsten s. n.* [W (♀)], *Hartweg 1367* [NY (fragment ♀)], *Humboldt & Bonpland 1746^{bis}* [NY (fragment ♀), P (♀)], *s. n.* [P (♂)]. TOLIMA: between Honda and Mariqueta, *Barriga 8172* [US (♂ ♀)]; above Honda, around Piedras, *Holton 288* [NY (?)]; Mariqueta, *Triana 1065* [P (♂)]; Ibagué, *Goudot 1* [P (♂ ♀)]; forests of El Pital above Tolima, *Lehmann 8713* [(♂) F, NY]; llanos de Tolima, around Ibagué, *Cuatrecasas & Arbelaez 6485* [(♀) F, US]. WITHOUT PRECISE LOCALITY: *Lehmann 909* [NY (♂)], *André 1937* [F (?), NY (♂)].

Known as *barbasquillo* and *pela manos*.

Curiously, some of the same tendencies of the preceding subspecies occur again in this group. The tendency of the rhachis to elongate is to be found in such specimens as *Barriga 8172* (US). Most remarkable, however, is the presence of poorly formed anthers in the pistillate flowers. The inflorescences are generally dichotomized 1 to several times.

The *Humboldt & Bonpland 1746* collection appears to be a split collection, this number appears in collections from Veracruz, Mexico and again in Guaduas, Colombia.

22d. *DAPHNOPSIS AMERICANA* ssp. *guatemalensis* Nevl. ssp. nov.

Folia elliptica usque oblanceolata 6–16 cm. longa 1–4 cm. lata apice obtusa usque acuminata; petiolo 7–10 mm. longo. Inflorescentia mascula umbelliformis; pedunculo primario 11–15 mm. longo; rhachide 1–2 mm. longo; pedunculis secundariis 0.5 mm. longis. Flores masculi: pedicello ca. 5 mm. longo; calyce obconico ca. 2 mm. longo 1.5 mm. lato; calycis lobis ca. 2.5 mm. longis 2.5 mm. latis;

staminibus in planis 2, antheris oblongis 1 mm. longis 0.5 mm. latis sessilibus; disco adnato, lobato; pistillodio ampulliformi apice quamquam dilatato 1 mm. longo glabro. Inflorescentia feminea umbelliformis; pedunculo primario 4–30 mm. longo; rhachide 1–2 mm. longo; pedunculis secundariis 0.5 mm. longis. Flores feminei: pedicello 4–7 mm. longo; calyce campanulato ca. 2 mm. longo 1.5 mm. lato; calycis lobis 1.25–1.5 mm. longis 1 mm. latis; staminodiis 8 papilliformibus; disco adnato lobato; stigmatate exserto. Fructus ovatus 9–10 mm. longus 6–7 mm. latus. HOLOTYPUS: *Aguilar 173* (F).

Flowers from late November to April at altitudes from 300 to 1700 meters.

MEXICO: CHIAPAS: Pan American highway 25 mi. s.e. of Comitán, *Carlson 1962* [(♀) F, MICH]; vicinity and east of Ocozocuatla, *Moore 2524* [A (♂)].

GUATEMALA: ESCUINTLA: without precise locality, *Ruano 992* [US (?)]. GUATEMALA: near Finca La Aurora, *Aguilar 173* [F (♀)]. HUEHUETENANGO: dry slopes between San Ildefonso Ixtahuacán and Ciulco, *Steyermark 50471* [F (s)]; Ciénaga de Lagartero, below Miramar, *Steyermark 51491* [F (s)], *51549* [F (♀)]; above Democracia on trail towards Jutal, *Steyermark 51052* [F (s)]. JALAPA: between Monjos and Jalapa, *Steyermark 32193* [F (s)]. JUTIAPA: between Jutiapa and La Calera, *Standley 76085* [F (s)] between Jutiapa and Las Tunas, *Standley 76248* [(♂) F, NY, US]; between Jutiapa and La Buerrera, *Standley 76011* [F (?)], *76016* [F (?)]; vicinity of Jutiapa, *Standley 32193* [F (s)]. SANTA ROSA: near El Molino, *Standley 78048* [F (s)]. WITHOUT PRECISE LOCALITY: *Ruano 817* [(♀) F, US].

Known in northern Guatemala as *camamán* according to Steyermark and is used for *mecabal* and for tying objects. In southern Guatemala it is known as *chilamatillo* or *capulincito* according to Standley, *llovizna* according to Ruano and *coralillo blanco* according to Aguilar.

22e. *DAPHNOPSIS AMERICANA* ssp. *tinifolia* (Sw.) Nevl. comb. & stat. nov.

Daphne tinifolia Sw. Prod. Veg. Ind. Occ. 63. 1788, (based on *Laurus americana* Mill.)

Nordmannia tinifolia (Sw.) Fisch. & C. A. Mey. in Bull. Acad. St. Petersburg 1:355. 1843; Ann. Sci. Nat. ser. II. 20:49. 1843.

Hargasseria tinifolia (Sw.) Endl. Gen. Suppl. 4²:68. 1847.

Daphnopsis tinifolia (Sw.) Meissn. in DC. Prod. 14:523. 1857, in part; Griseb. Fl. Brit. W. Ind. 278. 1860.

Daphnopsis tinifolia β *cumingii* Meissn. loc. cit. 1857. [T.: *Cuming 56* (♂)!]

Leaf blades elliptic to oblanceolate or rarely obovate, 6–18 cm. long, 2–8 cm. broad, acute to somewhat acuminate at the apex; petiole 5–10 mm. long. Inflorescences 1–3 times dichotomous, umbelliform. Staminate inflorescence with the primary peduncle 8–30 mm. long, the rhachis 1–2 mm. long, the secondary peduncles to 0.5 mm. long. Staminate flowers: 15–25 per inflorescence; pedicel 4.5–8.0 mm. long; calyx tube obconic, 3.5–4.5 mm. long, 1.5–2.0 mm. broad at the orifice; calyx lobes 1.0–2.5 mm. long, 1.0–1.5 mm. broad; antisepalous stamens inserted about an anther's length above the orifice, the alternisepalous inserted at the orifice, included to subexserted, the anthers oblong, about 0.75 mm. long, 0.5 mm. broad, sessile; disc basally adnate, about 0.5 mm. tall, irregularly lobed; pistillode tenpin-shaped, 1.5 mm. long, glabrous. Pistillate inflorescence with the primary peduncle 6–21 mm. long, the rhachis 1–2 mm. long, the secondary peduncles to 0.5 mm. long. Pistillate flowers: about 11 per inflorescence; pedicel 2–5 mm. long; calyx tube suburceolate to urceolate, 1.5–2.0 mm. long, about 1

mm. broad at the orifice; calyx lobes 0.75–1.5 mm. long, 0.75 mm. broad; staminodia 8, papilliform; disc as in staminate flower; pistil about 2 mm. long, the stigma exserted. Drupe ovoid, 7–15 mm. long, 7–9 mm. in diameter.

Flowers from June to November, although several specimens from Jamaica are at anthesis in January and February. Found at altitudes from 500 to 1300 meters.

CUBA: ORIENTE: on slope from Arroyo Jiménez to Arroyo Bayaja, *Ekman 14281* [(♂) MO, NY, S]; Puerto Padre, *Curbelo 132* [NY (♂)]; Finca Sabana, Palua Gouano (?), *Curbelo 185* [NY (♀)]; Bazote, Cayo del Rey, *Ekman 4682* [(s) NY, S], *8585* [(s) NY, S]; Manacal, *Ekman 9331* [S (?)], *9385* [(♀) NY, S]; Río Yara, *Ekman 5609* [S (s)]. WITHOUT PRECISE LOCALITY: *De La Ossa s. n.* [NY (fragment ♂)].

JAMAICA: CLARENDON: Round Hill, *Harris 9700* [(♀) F, NY, P, US]; Peckham woodland, *Harris 11084* [(♀) F, NY US]. HANOVER: Dolphin Head, *Britton 2337* [NY (s)]. MANCHESTER: Mandeville and vicinity, *Britton 1666* [NY (♀)]. ST. ANN: Reynold Jamaica Mine lands near Lydford P. O., *Howard & Proctor 13566* [A (♀)], *14024* [A (♀)], *14063* [A (♀)]; Moneague, *Hunnewell 19737* [GH (♂)], *Alexander s. n.* [C (♀), NY (♂ ♀), P (♂ ♀), US (♀), W (♂)]. ST. CATHERINE: Worthy Park, *Harris 11231* [(♀) F, NY, US]. ST. ELIZABETH: along the old road from Retirement to Mountainside, *Howard & Proctor 13711* [A (♂)]; Potsdam to Pedro Plains, *Britton 1201* [NY (♀)]. ST. THOMAS: Blue Mtns., near Abbey Cyreen (?), *Rebder s. n.* [A (♀)]. WESTMORELAND: Hopeton, *Harris 9764* [(♀) F, NY, US]. WITHOUT PRECISE LOCALITY: Latimer, *Hart s. n.* [NY (♂)]; Fairfield, *Cuming 56* [W (♂)], *Wullschlaegel 994* [M (♀)]; Chestervale, *Philipson 727* [MO (♂)]; Cinchona, *Philipson 1066* [MO (♀)]; Clydesdale to Chestervale, *Britton 337* [(♀) F, NY]; *Hart s. n.* [US (♂)], *626* [NY (♂)]; *March s. n.* [(♂ ♀) GH, NY]; *Swartz s. n.* [(♂) NY, S].

HAITI: SUD: around Constant, *Ekman H795* [(♀) A, S] Rivière Glass, *Holdridge 2111* [(♀) MICH, US]; Massif de la Houtte, Gr.-Goave, Trouin, *Ekman H2381* [(♂) NY, S, US].

Known as *guacacoa* or *guacacoa baria* in Cuba, *mahaut* in Haiti and *burn-nose tree* in Jamaica. The bark is used for rope.

Daphne tinifolia of Swartz was plainly based on Miller's *Laurus americana*, a fact which was either ignored by later workers or believed to be in error by them. In either case, Swartz's concept of the species was correct.

It is to be noted that specimens from Puerto Rico are not included in this subspecies. Other species of plants and animals showing the Antillean distribution often have the subspecific distributional limits drawn between Puerto Rico and the Lesser Antilles. This phenomenon is strongly supported by geologic evidence, namely that the islands of Cuba, Jamaica, Hispaniola and Puerto Rico were formed much earlier than those of the lesser Antilles and were at one time continuous. I have included the Puerto Rican specimens in subspecies *caribaea*. The fact that there are no specimens from the Dominican Republic may or may not furnish the answer to this problem. Unfortunately, the Dominican Republic is so poorly collected that it is impossible to determine whether the plants occur there or not; but, if they do not the evidence strongly suggests the establishment of this subspecies in the Greater Antilles at some time *after* the disjunction of Puerto Rico from the remainder of the Greater Antilles and *before* their eventual disjunction. This would mean that the Puerto Rican specimens, as well as those of the Lesser Antilles, migrated to these islands from the south rather than from the north as postulated by Beard.¹⁴ Beard was seriously handicapped by lack of knowledge of the plants in northern South America.

¹⁴ Beard, J. S. Oxford Forestry Memoirs No. 21. 1949.

The De La Ossa specimen is labeled "Havanna" but I seriously doubt its validity, therefore I place it among those specimens without precise locality.

22f. *DAPHNOPSIS AMERICANA* ssp. *ecuadorensis* (Domke) Nevl. comb. & stat. nov.

Daphnopsis caribaea var. *ecuadorensis* Domke, in Notizbl. 12:727. 1935. [T.: Eggers 14316 (♂)!]

Leaf blades elliptic to oblanceolate, 6–16 cm. long, 2–5 cm. broad, acute to subcaudate-acuminate at the apex; petiole 4–6 mm. long. Inflorescences 2–3 times dichotomous, umbelliform. Staminate inflorescence with the primary peduncle 1.0–4.5 cm. long, the rhachis 1–3 mm. long, the secondary peduncles 0–3 mm. long. Staminate flowers: 18–30 per inflorescence; pedicel about 8.5 mm. long; calyx tube obconic, 3.5 mm. long, 1.5–2.0 mm. broad at the orifice; calyx lobes about 2.5 mm. long, 1.75 mm. broad; antisepalous stamens inserted about an anther's length above the orifice, the alternisepalous inserted at the orifice, subexserted, the anthers oblong, 0.75 mm. long, 0.5 mm. broad, sessile or subsessile; disc subcupuliform, basally adnate, about 0.5 mm. tall, irregularly lobed, glabrous; pistillode obovoid or tenpin-shaped, 1.0–2.5 mm. long, minutely hirsute at the apex. Pistillate flowers and fruit not seen.

Flowers from February to March.

ECUADOR: GUAYAS: Balao, Eggers 14316 [(♂) A, M, US]. MANABÍ: El Recreo, Eggers 14316^{bis} [F (♂)].

Known as *sapan de venado*.

Eggers 14316 may be a split collection or a label was somehow miscopied.

22g. *DAPHNOPSIS AMERICANA* ssp. *caribaea* (Griseb.) Nevl. comb. & stat. nov.

Daphnopsis tinifolia (Sw.) Meissn. in DC. Prod. 14:523. 1857, in part.

Daphnopsis caribaea Griseb. Fl. Brit. W. Ind. 278. 1860. [T.: Imray 118 (♀)!]

Daphnopsis seibertii Standl. in Ann. Mo. Bot. Gard. 24:192. 1937. [T.: Seibert 444 (♀)!]

Leaf blades lanceolate to elliptic or oblanceolate, rarely obovate, 5–21 cm. long, 1.5–7.0 cm. broad, acute to subcaudate-acuminate at the apex; petiole 5–10 mm. long. Inflorescence 1–9 times dichotomous. Staminate inflorescence umbelliform, the primary peduncle 4–24 mm. long, the rhachis 1–2 mm. long, the secondary peduncles to 0.5 mm. long. Staminate flowers: 10–75 per inflorescence; pedicel 1.5–3.5 mm. long; calyx tube obconic, 3.0–4.5 mm. long, 1.0–1.5 mm. broad at the orifice; calyx lobes 1.0–2.5 mm. long, 1.5–2.0 mm. broad; antisepalous stamens inserted about an anther's length above the orifice, the alternisepalous inserted at the orifice, subexserted, the anthers suborbicular to oblong, 0.75–1.0 mm. long, 0.5–0.75 mm. broad, sessile; disc annular, free almost to the base, about 0.25 mm. tall, glabrous, irregularly short-lobed; pistillode tenpin-shaped, 1.0–1.5 mm. long, glabrous. Pistillate inflorescence umbelliform, the primary peduncle 3–10 mm. long, the rhachis 1–2 mm. long, the secondary peduncles to 1 mm. long. Pistillate flowers: 10–25 per inflorescence; pedicel 1–3 mm. long; calyx tube suburceolate, 1.5–2.0 mm. long, 1.0–1.5 mm. broad at the orifice; calyx lobes about 1.5 mm.

long, 1 mm. broad; staminodia 8, papilliform; disc as in staminate flower; pistil 1.5–2.0 mm. long, the stigma exserted. Drupe ovoid, 6–7 mm. long, 3–4 mm. in diameter.

ANTIGUA: Sugar Loaf, *Wullschlaegel* 494 [M (♀)]; Dunning Valley, Box 1036 [(♂) F, MO, US]; Wallings, Box 1104 [(♂) A, US], 1105 [US (♀)]; Boggy Peak, Rose, *Fitch & Russell* 3426 [(♀) NY, US]; without precise locality, *Wullschlaegel* s. n. [NY (♂ ♀)].

COLOMBIA: MAGDALENA: Don Amo, Santa Marta, *Smith* 2414 [(♂) A, F, GH, K, MO, NY, P, S, U, US], 2416 [(♀) A, F, GH, K, MO, P, S, U, US]; Cuaco Mountain, *Smith* 2415 [(♀) A, F, GH, MO, NY, P, S, US]. SANTANDER: Río Suratá Valley, between Bucaramanga and El Jaboncillo, *Killip & Smith* 16383 [(♂) A, GH, NY, US]. VALLE: Restrepo, *Killip* 11259 [NY (♀)]; Río Dagua, *André* 1624 [(♂) F, NY]. WITHOUT PRECISE LOCALITY: *André* 1398 [K (♀)], s. n. [K (♀)].

COSTA RICA: ALAJUELA: La Palma de San Ramón, *Brenes* 5579 [F (♀)], 6775 [F (♂)], 6808 [F (♂)], 6826 [MO (♂)]; La Brisa de Zarcero, Alfaro Ruiz, *Smith* H968 [(♂) A, F, US]; La Plama El Socorro de San Ramón, *Brenes* 6211 [F (?)]; San Pedro, circa de San Francisco de San Ramón, *Brenes* 6680 [(♂) F, NY]. CARTAGO: partially forested pasture lands near Congreja, former cloud forest area, Cordillera de Talamanca, *Williams* 16341 [F (♀)]. HEREDIA: Cerro de Zurqui, n.e. of San Isidro, *Standley & Valerio* 50263 [(♂) F, US].

DOMINICA: Carib trail from Salybia to Hatton Garden, *Hodge* 466 [(♂) MO, US]; rainforest on the precipitous slopes of Morne Colla Anglais, Sylvania, *Hodge* 465 [(♂) GH, US]; Sylvania Estate, *Hodge* 464 [(♀) GH, NY]; moist forests along Carib trail from Salybia to Concorde Valley (Roseau Track), Carib Reserve, *Hodge & Hodge* 3274 [GH (♂)]; Laudat, *Lloyd* 353 [NY (♀)]; Humpstead, *Lloyd* 666 [NY (♀)]; Chattanooga Estate, *Hodge* 885 [NY (?)]; So. Chiltern, *Hodge & Hodge* 1534 [(♂) GH, NY]; without precise locality, *Eggers* 917 [(♂) M, P, W], *Imray* s. n. [GH (♀)], 118 [K (?), NY (♀)].

GUADELOUPE: BASSE-TERRE: Vieux-fort, *Stéblé* 1574 [US (♂)], *Questel* 2381 [US (♀)], 2382 [US (♀)]; St. Rose, *Questel* 868 [US (♀)]; Gourbeyre, *Duss* 2220 [NY (♀)]; without precise locality, *Duss* s. n. [S (♀)], *Krauss* s. n. [NY (♀)], *Liebmann* s. n. [C (♀)], *Robr* s. n. [C (♂)], *Stéblé* 2 [NY (♀)].

MARTINIQUE: Route de Fonds St. Denis à St. Pierre, *Stéblé* 2189 [IAN (♂), NY (♂ ♀), US (♂)]; Hateur du Grand Fond, *Hahn* 1141 [GH (♀), NY (♀), US (?)]; Rivière Madame, *Stéblé* 6029 [A (♂)]; Rivière Pilote, *Hahn* 865 [(♀) P, U]; Parnasse, *Duss* 2103 & 4567 [NY (♀), US (♂)]; Balata, *Mouret* 249 [P (♂)]; without precise locality, *Plee* s. n. [P (♀)], *Duss* 2103 [F (♀), GH (♂), MO (♂)], *Hahn* 520 [P (♂)], *Richard* s. n. [P (♂ ♀)], *Sieber* s. n. [(♂) C, M, MO, NY, P, U, W].

NICARAGUA: CHONTALES: vicinity of La Libertad, *Standley* 8824 [(♂) F, US]. JINOTEGA: Cerro Sialci, sierra s.w. of Jinotega, chiefly in dense wet mixed cloud forest, *Standley* 10552 [F (s)]; vicinity of Jinotega, *Standley* 9636 [F (s)], 10035 [F (♂)]; along trail between Jinotega and Las Mesitas, w. of Jinotega, *Standley* 9809 [F (♀), MO (?)].

PANAMA: COCLÉ: between Las Margaritas and El Valle, *Woodson, Allen & Seibert* 1281 [(♂) A, F, MO, NY], 1764 [(♂) A, F, MO, NY]; El Valle de Antón and vicinity, *Seibert* 416 [(♂) A, F, MO, NY], 444 [F (♀), MO (♂ ♀), NY (♀)]. HERRERA: Pesé, *Allen* 795 [(♀) F, GH, MO, NY, US].

PUERTO RICO: GUAYAMA: Cayey, *Sintenis* 2305 [(♀) GH, M, P, S, US], 2360 [(♀) MO, P, US]; Aibonito, *Sintenis* 2142 [(♂) GH, M, P, S, US], *Britton, Britton & Brown* 5879 [NY (♂)], *Heller & Heller* 887 [(♂) F, NY, US], *Wetmore* 211 [US (♀)]; road from Insular road to PRRA farm at Guavate, Cayey, *Gregory* 82 [NY (♀)]. HUMACAO: Sierra de Juncos, Guvuy, *Sintenis* 2635 [(♂) F, NY, US W]; Maunabo, *Britton & Britton* 8760 [NY (♀)]; Maunabo to Punta de la Tuna, *Sintenis* 5090 [C (♀), U (?)]; along road e. of Ciénega Alta Camp, Western Luquillo Mts., *Holdridge* 236 [(♂) A, NY]; Ceiba, *Britton & Britton* 7810 [NY (?)], *Britton & Shafer* 1533 [(♀) NY, US]. SAN JUAN: Río Piedras, *Johnston* 675 [(♂) NY, US]. WITHOUT PRECISE LOCALITY: *Britton & Boynton* 8171 [NY (♂)], *Stahl* s. n. [S (♂)].

ST. CROIX: Parasol Hill, *Ricksecker* 464 [F (♂)].

ST. EUSTATIUS: White Wall, *Boldingh* 1177 [(♂) NY, US] *Stoffers* 4044 [U (♀)]; Top of the Quill, *Boldingh* 197 [U (s)], 291 [U (s)], 397 [U (?)], *Stoffers* 3906 [U (s)].

ST. JOHN: Rosenberg, *Britton & Shafer* 312 [C (♀), F (♂), NY (♂ ♀), US (♀)].

ST. KITTS: Buckley Estate, *Britton & Cowell* 193 [(♀) NY, US]; without precise locality, *Ryan s. n.* [C (s)].

ST. LUCIA: The Morne, Castries, *P. Beard* 1020 [GH (?), MO (?), S (♀), US (?)].

ST. MARTIN: Cul de Sac, *Boldingh* 2604 [U (♂)]; Mount Paradis, *Boldingh* 3240 [U (?)]; Milldrum hill, *Boldingh* 3119 [U (s)], 3124 [U (?)].

ST. THOMAS: Signal hill, *Eggers s. n.* [(♂) C, W]; Mafolie, *Eggers* 40 [(♂) M, P, W]; Frenchman's Bay, *Eggers* 136 [C (♂), F (♂), M (♀), NY (♂)], *s. n.* [(♂) C, W]; Bolongo, *Eggers* 726 [(♀) A, P]; St. Peter, *Britton & Marble* 1245 [(♀) C, F, MO, NY, US]; without precise locality, *Eggers s. n.* [NY (♀)], *Raunkiaer s. n.* [C (?)].

ST. VINCENTS: Caley, *Banks s. n.* [W (♂)]; without precise locality, *Guilding s. n.* [K (♂)], *Smith & Smith* 927 [GH (♂), NY (♂ ♀)].

SABA: Hellsgate, *Boldingh* 1699 [U (♂)] *Stoffers* 4139 [U (♂)]; Springbaygut, *Boldingh* 2077 [U (s)]; Great Hill, *Boldingh* 1386 [U (?)]; Tentgut Hill, *Boldingh* 1654 [U (?)]; along road between Bottom and Windwardside, *Boldingh* 1359 [U (?)]; Leuvel by Bottom, *Fr. Arnoldo* 920 [U (♀)]; Weg Windwardside, *Fr. Arnoldo* 920 [U (♂)]; Castle Hill, *Stoffers* 4198 [U (s)]; Booby Hill, *Stoffers* 4277 [U (♂)], 4305 [U (♂)], 4336 [U (♂)].

TOBAGO: Frenchfield, *Eggers* 5542 [A (♀), P (♂), US (♀)]; Logwood Park, *Broadway* 3413 [(♂) BY, F, M, NY, S, U]; slopes of French Hill, *Sandwith* 1690 [(♂) NY, U]; near Mount Grace, *Broadway* 2927 [(♂) MO, P]; ascent of Pigeon Hill, *Sandwith* 1813 [NY (♀)].

VENEZUELA: ARAGUA: in transition belt, Guamitas, National Park, *Williams* 10246 [(♂) A, F, MICH, MO]. BOLÍVAR: Margarita Island, Juan Diego Trail, *Johnston* 257 [(♀) C, F, GH, NY, S, US, W]. FALCÓN: Santa Ana Paraguaná, *Tamayo* 846 [US (♂)].

VIEQUES: Cerro Encanta, *Shafer* 2550 [(♀) NY, S]; Cerro Ventana, *Shafer* 2977 [(?) NY, US].

Beard also reports this group on Montserrat, Nevis, Grenada and the Grenadines but I have not seen any specimens from these islands.

Common names: St. Thomas—*mabo*; Guadeloupe—*mabot-piment*; Dominica—*mabout pimente*; St. Vincent—*mahoe pimente*; Tobago—*burn nose*; Costa Rica—*mastate*; Nicaragua—*mancuno*, *mancume*, *pellejo de vieja*. The bark is used for rope, particularly for bridles as it is apparently bitter so that the animals will not chew it. *Broadway* reports that the fruits are eaten by the "blue pigeon".

I have chosen *Imray* 118 (NY) as the lectotype for this subspecies.

As previously mentioned, the Puerto Rican specimens show definite affinities to this subspecies. The fact that the specimens are unknown from western Puerto Rico suggests that the plants of Puerto Rico have immigrated from the Lesser Antilles and are not remnants of a group previously existing on the island when it was continuous with the remainder of the Greater Antilles. The differences between specimens of Puerto Rico and the remainder of the Greater Antilles is in some aspects rather striking. The characteristics of the Cuban, Jamaican and Haitian specimens have already been summarized in the description of subspecies *tinifolia*. It may be worth while to describe briefly some of the points on which the Puerto Rican specimens differ. Staminate flowers: pedicel 3.0–3.5 mm. long

and always shorter than the calyx tube; disc 0.25–0.5 mm. tall, adnate only at the extreme base, irregularly short-lobed, glabrous. Pistillate flowers: pedicel 1.0–2.5 mm. long; flower not seen; fruit 6–7 mm. long, 4–5 mm. in diameter. The staminate disc differences and the fruit size are considered to be important differences between these two subspecies at the closest approach to one another.

23. *DAPHNOPSIS FLAVIDA* Lundell, in *Phytologia* 2:3. 1941. [T.: *Matuda 4157* (♂)!]

Shrubs or trees to 5 m. tall, the young branches tomentose and glabrescent. Leaf blades elliptic, 3–10 cm. long, 1–4 cm. broad, acute to subcaudate-acuminate at the apex, acute at the base, chartaceous, glabrous above and below, the costa plane above, emersed below, the primary lateral veins prominulous above, prominent below, arcuate-ascending; petiole 3–5 mm. long. Inflorescence borne from

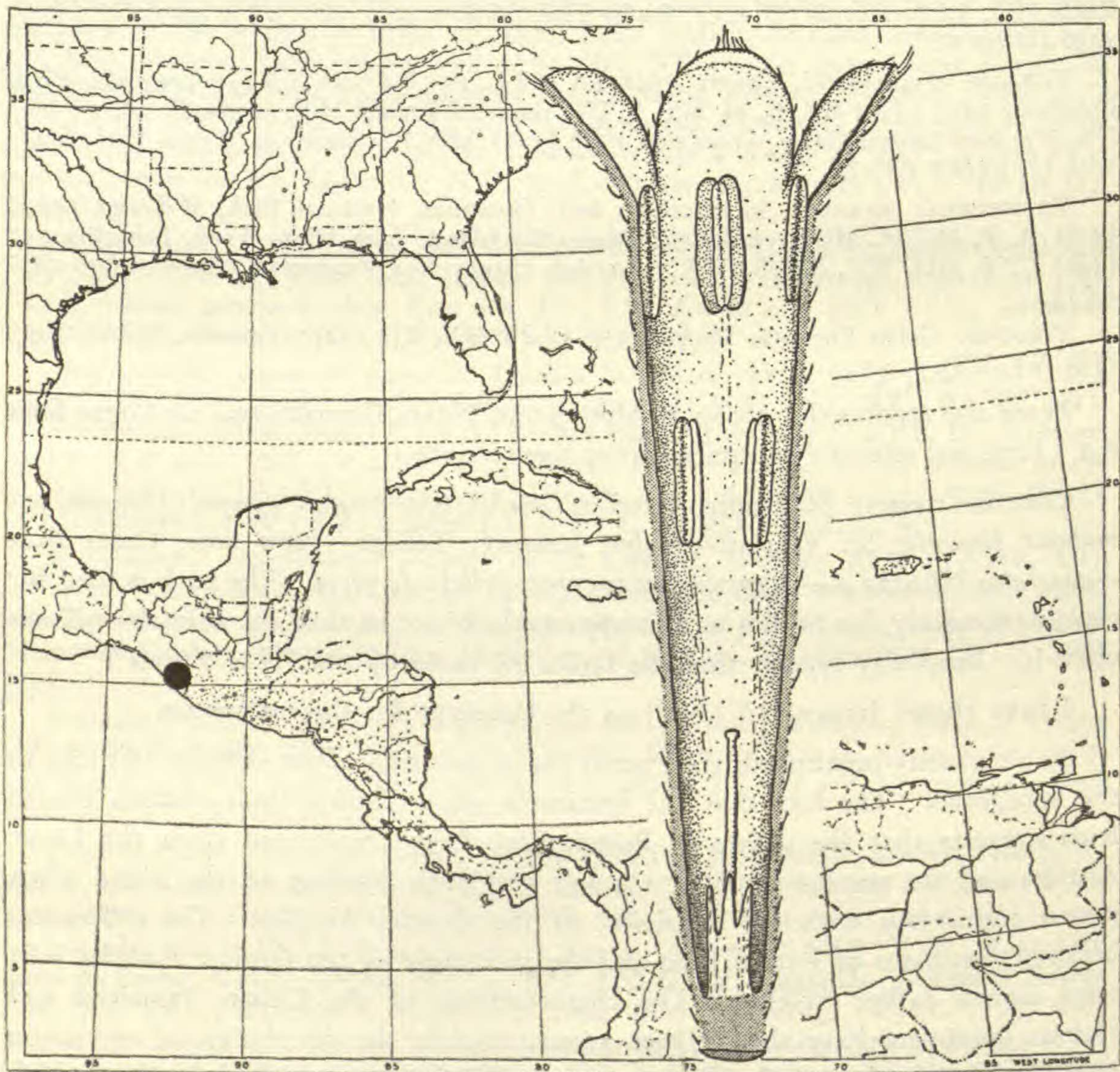


Fig. 28. *Daphnopsis flavida*

the young leafy stem or on axillary brachyblasts, umbelliform, minutely sericeous, the primary peduncle 1–5 cm. long, the rhachis about 1 mm. long, the secondary peduncles to 1 mm. long. Staminate flowers: 4–6 per inflorescence; pedicel about 0.5 cm. long; calyx tube narrowly obconic, about 9 mm. long, 1.5–2.0 mm. broad at the orifice, minutely puberulent without, glabrous within; calyx lobes subequal, indefinitely papillate within, 1.5–2.0 mm. long, 1.0–1.5 mm. broad; petals absent; antisepalous stamens inserted below the orifice, included, the alternisepalous inserted about two anthers' lengths below the antisepalous, included, the anthers oblong, 1.0–1.5 mm. long, 0.5 mm. broad, sessile; disc cupuliform, free, to 1.5 mm. tall, long-lobed, glabrous; pistillode lageniform, about 3 mm. long, glabrous. Pistillate flowers and fruit not seen.

MEXICO: CHIAPAS: Mt. Ovando, Escuintla, *Matuda* 4157 [(♂) A, F, GH, MICH, US].

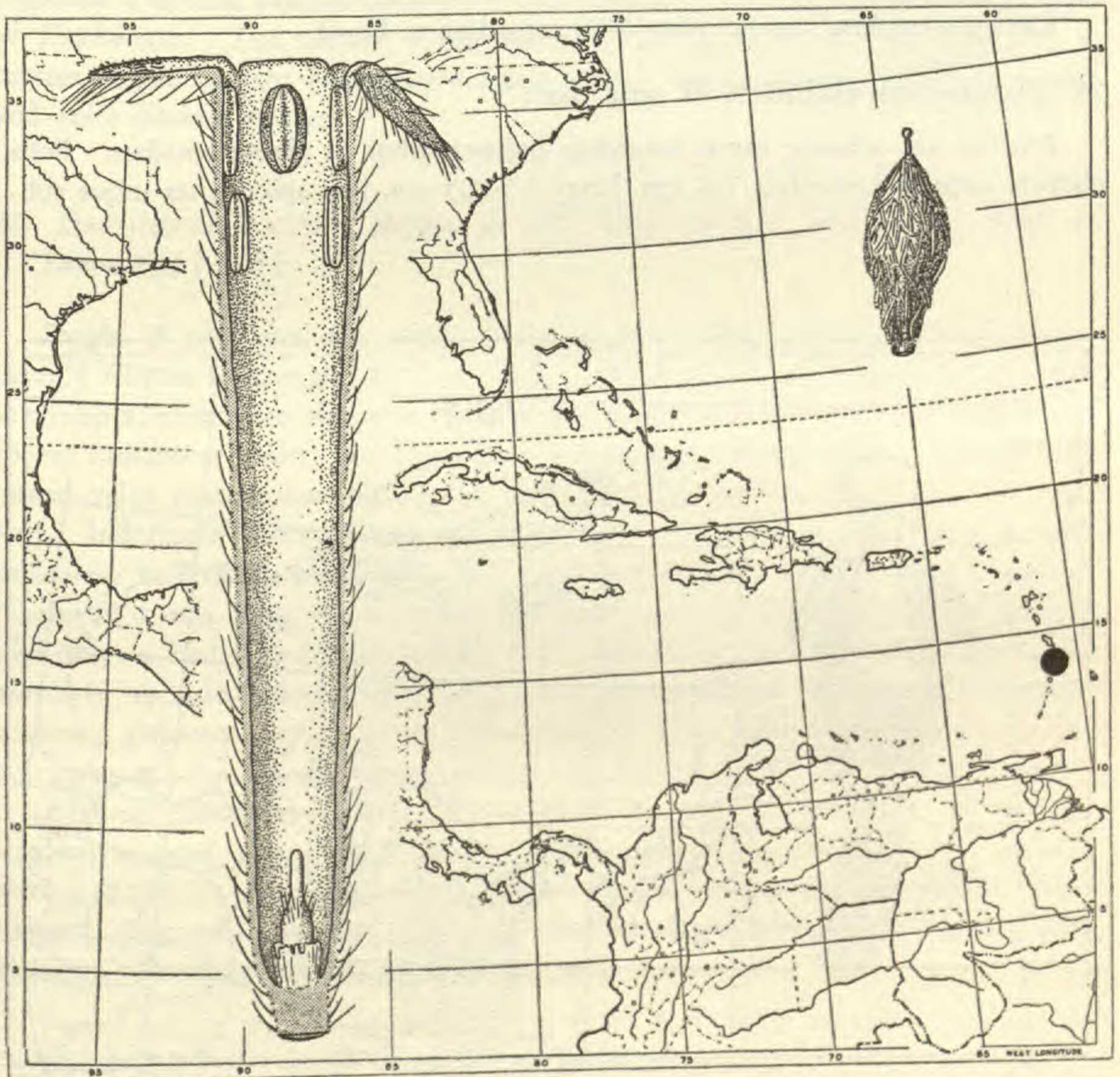


Fig. 29. *Daphnopsis macrocarpa*

24. *DAPHNOPSIS macrocarpa* Nevl. spec. nov.

Frutices ad 3 m. altae. Folia oblanceolata usque elliptica 11–26 cm. longa 4.0–9.5 cm. lata apice acuminato-attenuata basi cuneata subcoriacea glabra, venis primariis lateralibus arco-ascendentibus; petiolo 0.8–1.3 cm. longo. Inflorescentia mascula umbelliformis; pedunculo primario ca. 7 mm. longo; rhachide ca. 1 mm. longo; pedunculis secundariis 0.5 mm. longis. Flores masculi 3–5 per inflorescentia; pedicello 0.5–1.0 mm. longo; calyce obconico ca. 10.5 mm. longo 1.5 mm. lato extus pubescente intus glabro; calycis lobis subequalibus intus pubescentibus 1.5 mm. longis 1 mm. latis; petalis 0; staminibus in planis 2, antheris oblongis 1.0–1.25 mm. longis 0.5 mm. latis sessilibus; disco campanulato glabro; pistillodio ampulliformi apice quamquam dilatato ca. 1.5 mm. longo hirtello. Flores feminei non vidi. Fructus ellipticus ca. 3 cm. longus 1 cm. latus. HOLOTYPUS: *Beard 479* (MO).

Found at altitudes from 300 to 900 meters, flowering in November.

ST. LUCIA: Piton Flore, *Beard 497* [(♀) A, K, MO, NY, U]; Morne Paix Bouch, *Box 1918* [B (♂)].

Known as *mabout piment grand bois* according to Beard.

25. *DAPHNOPSIS alainii* Nevl. spec. nov.

Frutices nisi arbores; ramis juvenibus pubescentibus et glabrescentibus. Folia obovata usque oblanceolata 3–6 cm. longa 1.5–2.5 cm. lata apice acuta usque sub-

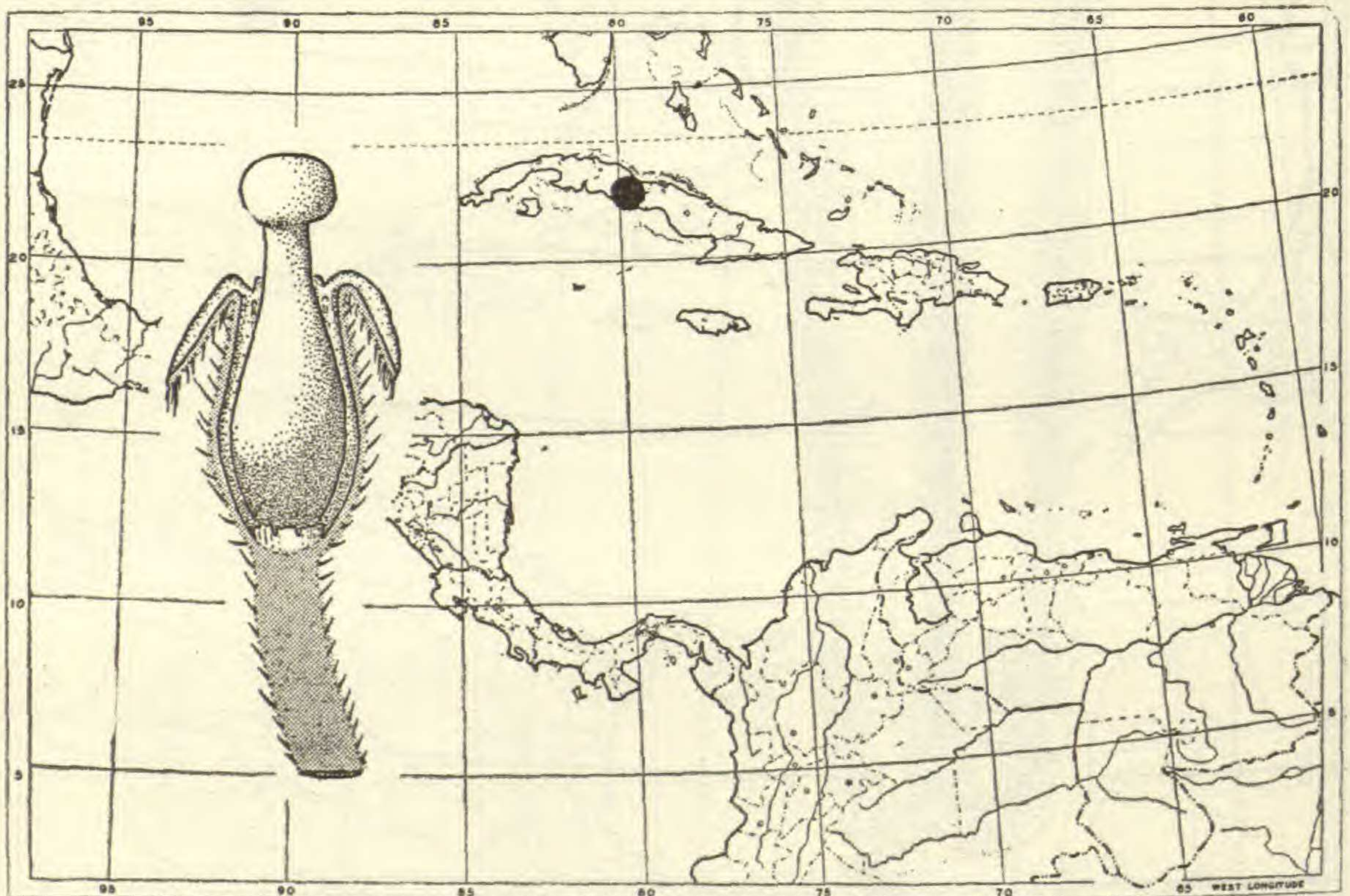


Fig. 30. *Daphnopsis alainii*

rotundata basi cuneata coriacea supra glabra subtus puberulentia et glabrescentia, venis primariis lateralibus arco-ascendentibus; petiolo 2–4 mm. longo. Inflorescentia feminea umbelliformis; pedunculo primario 5–10 mm. longo; rhachide ca. 0.5 mm. longo; pedunculis secundariis ca. 0.5 mm. longis. Flores feminei 5–7 per inflorescentia; pedicello 1–2 mm. longo; calyce urceolato 2.0–2.5 longo 1.0–1.5 mm. lato extus pubescente intus glabro; calycis lobis subequalibus intus glabris ca. 1.25 mm. longis 1.5 mm. latis; petalis 0; staminodiis 8 papilliformibus; disco humili libero glabro; pistillo 2.5–3.0 mm. longo ovario ovato glabro stigmatate capitato exserto. Flores masculi et fructus non vidi. HOLOTYPUS: *Bro. Alain 6464* (MO).

This species is known only from a single collection at an altitude of 950 meters. Flowering in July.

CUBA: LAS VILLAS: Near Pico Potrerillo, Trinidad Mts., *Bro. Alain 6464* [(♀) MO, LS.]

The holotype was part of a gracious gift to the Missouri Botanical Garden from the Colegio de la Salle. Bro. Alain believed that the specimen might possibly represent a hybrid, perhaps between *D. punctulata* and some undetermined species of *Daphnopsis*. The mature leaves resemble the leaves of *D. punctulata* to a certain degree but the resemblance ceases there. This specimen represents a new and quite distinct species.

26. *DAPHNOPSIS PAVONII* Meissn. in DC. Prod. 14:522. 1857. [T.: *Ruiz & Pavon 134* (♂)!]

Shrubs if not trees, the young branches ochraceous-tomentose. Leaf blades broadly elliptic to obovate, 2–8 cm. long, 1.5–3.5 cm. broad, rotund to subacute at the apex, cuneate to obtuse at the base, subcoriaceous, tomentose and glabrescent above, tomentose below, the costa immersed above, emersed below, the primary lateral veins prominulous above and below, arcuate-ascending; petiole 2–4 mm. long. Inflorescence borne from the young leafy stems, dense racemiform to umbelliform, ochraceous-tomentose, the primary peduncle 3.0–3.5 cm. long, the rhachis to 3 mm. long, the secondary peduncles 1–2 mm. long. Staminate flowers seen only in bud: 12–15 per inflorescence; pedicel to 3.5 mm. long; calyx tube narrowly obconic, about 5 mm. long, 1–2 mm. broad at the orifice, tomentose without, glabrous within; calyx lobes unequal, indefinitely papillate within, the outer about 2 mm. long, 1.5 mm. broad, the inner 1.0–1.5 mm. long and broad; petals absent; antisepalous stamens inserted at the orifice, subexserted, the alternisepalous inserted two anthers' lengths below the orifice, included, the anthers oblong, 0.75–1.0 mm. long, 0.5–0.75 mm. broad, sessile; disc cupuliform, free, about 1 mm. tall, undulate, glabrous; pistillode lageniform, 1.0–1.5 mm. long, glabrous. Pistillate flowers and fruit not seen.

PERU: JUNIN: Palca, *Ruiz & Pavon 134* [(♂) F, P, NY]. WITHOUT PRECISE LOCALITY: *Ruiz & Pavon s. n.* [P (♂)], *Rivero 808* [P (♂)].

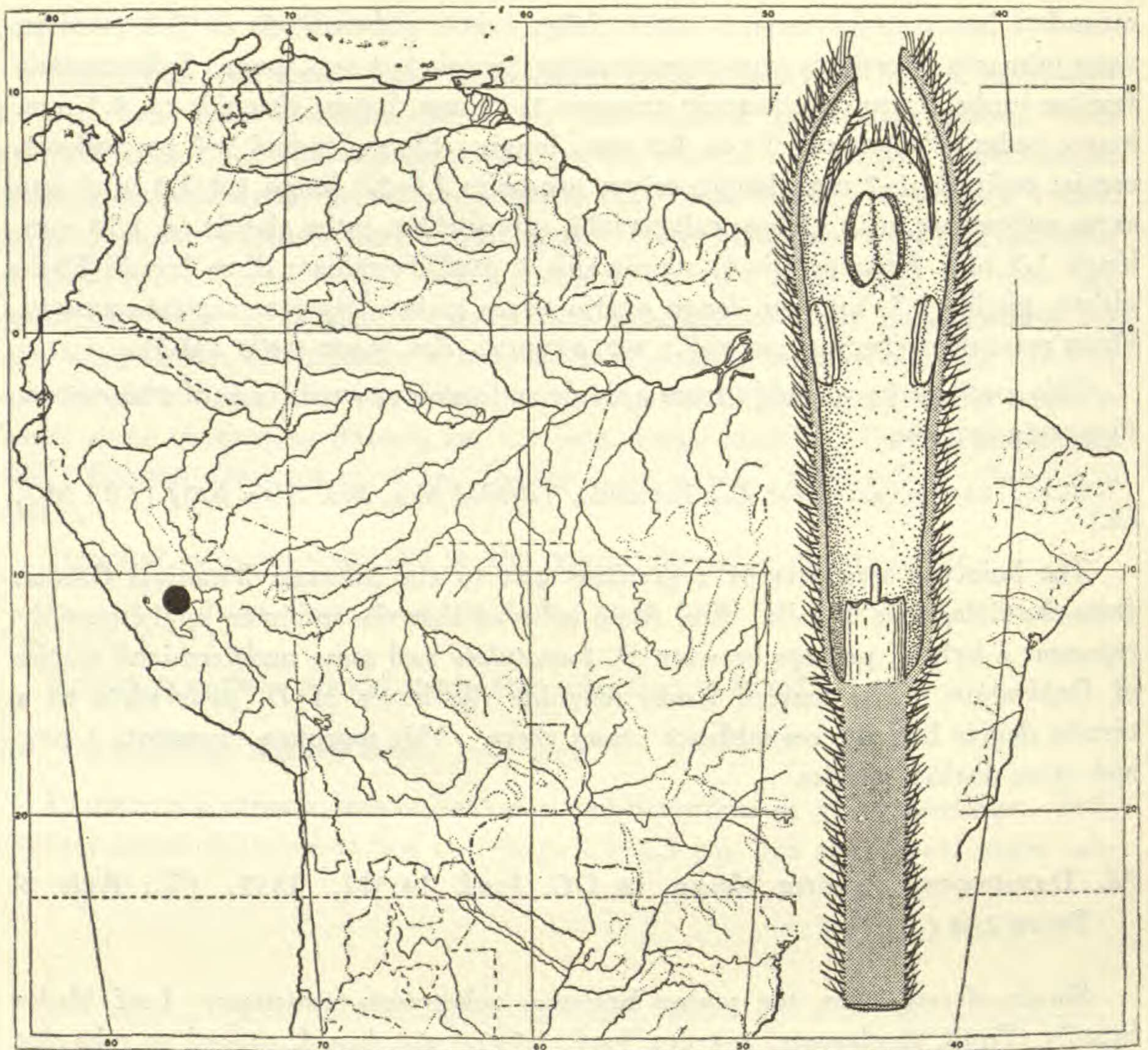


Fig. 31. *Daphnopsis pavonii*

27. *DAPHNOPSIS PSEUDOSALIX* Domke, in Notizbl. 12:724. 1935. [T.: Pabst 546 (♂)]

Small shrubs, the young branches densely puberulent and glabrescent. Leaf blades narrowly elliptic, 4.0–12.5 cm. long, 1–2 cm. broad, acuminate or sometimes more or less obtuse at the apex, cuneate at the base, chartaceous, sericeous and glabrescent above, sericeous or strigillose below, the costa plane above, emersed below, the primary lateral veins prominulous on both surfaces, arcuate-ascending, the margin somewhat revolute; petiole 1–6 mm. long. Inflorescences borne from the young leafy stem, racemiform, minutely puberulent, the primary peduncle 1.0–1.8 cm. long, the rhachis 1–6 mm. long, the secondary peduncles 1–3 mm. long. Staminate flowers: (7–) 10–15 per inflorescence; pedicel about 2 mm. long; calyx tube narrowly campanulate, about 2 mm. long, 1.0–1.5 mm. broad at the orifice, tomentellose without, glabrous within; calyx lobes unequal, puberulent within, the outer about 1.5 mm. long, 1 mm. broad, the inner 1.0–1.25 mm. long, 1 mm.

broad; petals absent; antisepalous stamens inserted at the orifice, subexserted, the alternisepalous inserted just below the orifice, included, the anthers suborbicular, 0.5 mm. long and broad, sessile; disc annular, free, less than 0.25 mm. tall, more or less entire, glabrous; pistillode bottle-shaped, about 0.75 mm. long, glabrous. Pistillate flowers and fruit not seen.

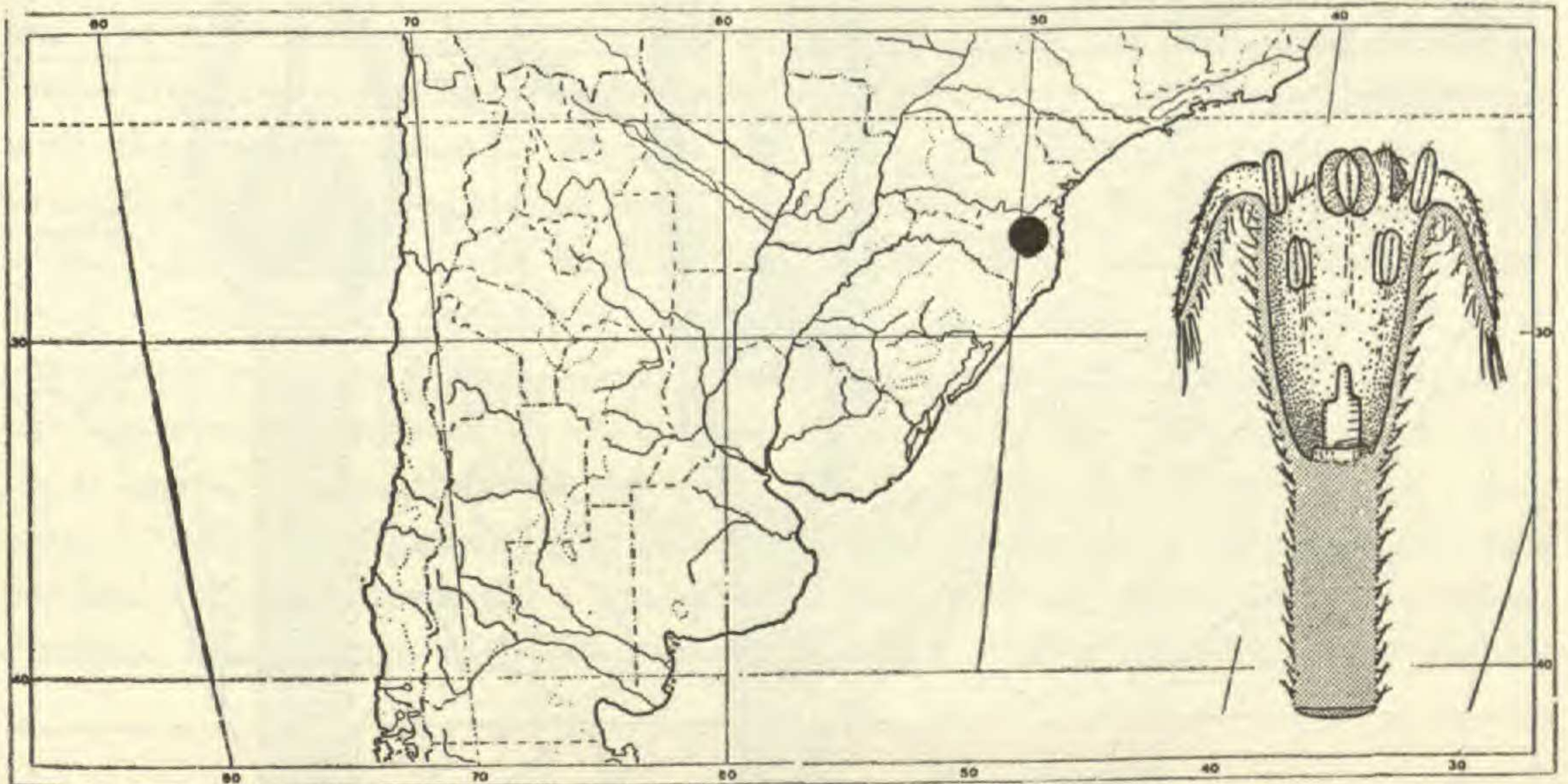


Fig. 32. *Daphnopsis pseudosalix*

BRASIL: SANTA CATARINA: propre Blumenau, Schwacke & Müller 5981 [RB (♂)]; without precise locality, Saint Hilaire 1749 [P (♂)], Nadeaud s. n. [(♂) F, P].

A poorly known species represented only in older collections.

28. *DAPHNOPSIS anomala* (HBK.) Nevl. comb. nov.

Daphne anomala HBK. Nov. Gen. 2:151. 1817. [T.: Humboldt & Bonpland 2110 (♀) photo !]

Ovidia humboldti Meissn. in DC. Prod. 14:525. 1857, (based on *Daphne anomala* HBK.)

Ovidia anomala (HBK.) Gilg, in Engl. & Prantl Pflanzenf. 3^{6a}:239. 1894

Trees, the young branches strigose and glabrescent. Leaf blades elliptic to oblanceolate, 10–30 cm. long, 3–9 cm. broad, acute to subcaudate-acuminate at the apex, cuneate to subobtuse at the base, chartaceous, densely to sparsely strigose above and below, the costa emersed above and below, the primary lateral veins prominent above and below, arcuate-ascending; petiole 3–10 mm. long. Inflorescences borne from the young leafy stems, umbelliform, strigose, the primary peduncle 3.0–3.5 cm. long, the rhachis 2–3 mm. long, the secondary peduncles about 1 mm. long. Staminate flowers: 20–30 per inflorescence; pedicel about 3 mm. long; calyx tube narrowly obconic, 5–6 mm. long, 1.5–2.0 mm. broad at the orifice, strigose without, glabrous within; calyx lobes unequal, minutely puberulent within, the outer about 1.5 mm. long, 1.0–1.25 mm. broad, the inner about 1.5 mm. long, 1.5–2.0 mm. broad; petals absent; antisepalous stamens inserted just

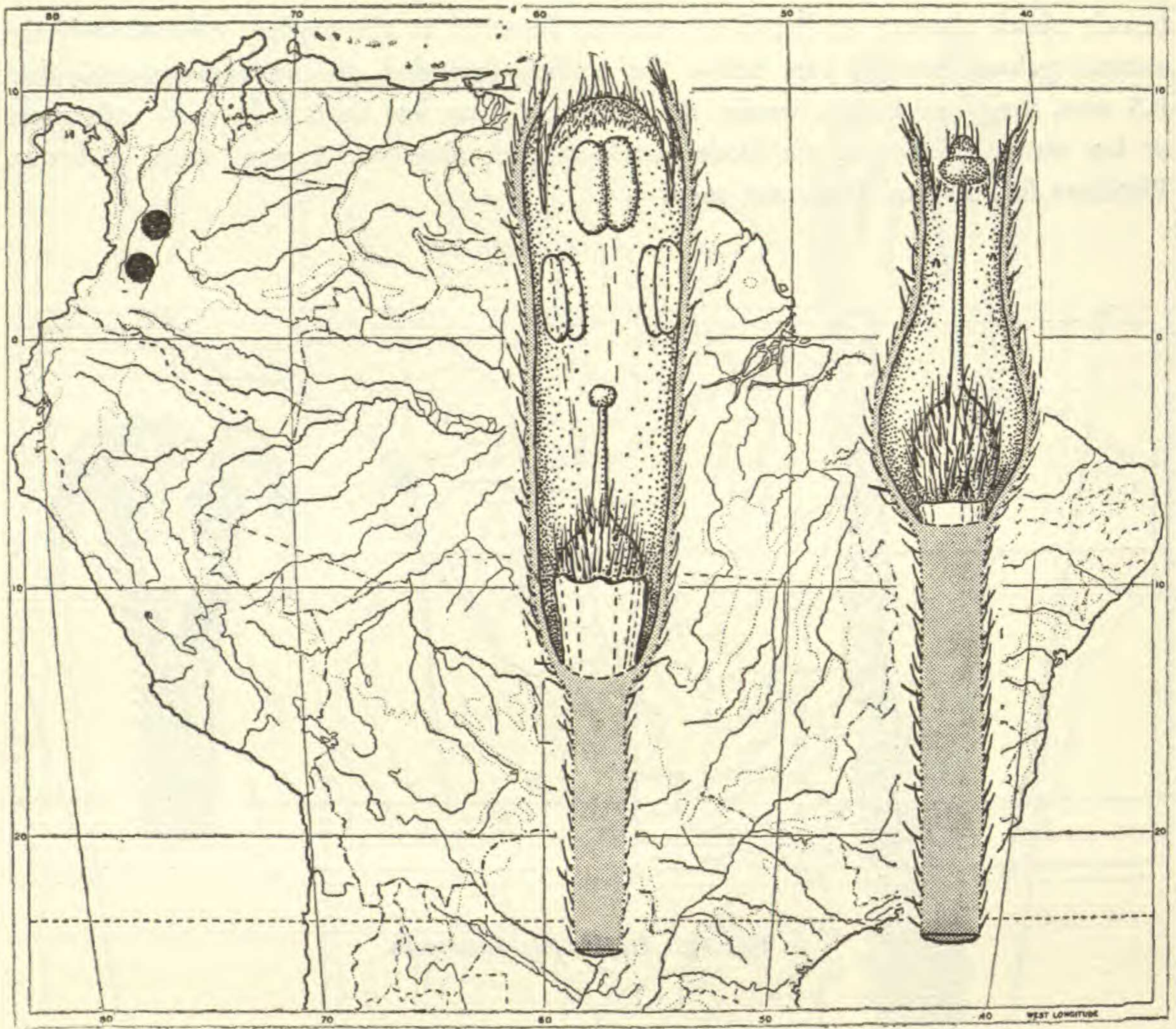


Fig. 33. *Daphnopsis anomala*

above the orifice, subexserted, the alternisepalous inserted about one and a half anthers' lengths below the orifice, included, the anthers suborbicular, 0.75–1.0 mm. long and broad, sessile; disc cupuliform, free, about 1 mm. tall, undulate; pistillode lageniform, about 3 mm. long, densely setose. Pistillate flowers: 12–25 per inflorescence; pedicel about 4.5 mm. long; calyx tube urceolate, about 3.5 mm. long, 1.0–1.5 mm. broad at the orifice, strigose without, glabrous within; calyx lobes subequal, minutely puberulent within, 1.0–1.5 mm. long and broad; petals absent; staminodia 8, papilliform; disc annular, free, about 0.25 mm. tall, undulate to entire, glabrous; pistil about 4 mm. long, the ovary ovoid, densely setose, the style about 2.5 mm. long, the stigma capitate, exserted. Fruit not seen.

COLOMBIA: CAUCA: around Popayan, *Humboldt & Bonpland 2110* [photo F, MO].
TOLIMA: Quindio *Goudot 129* [P (♂ ♀)].

29. *DAPHNOPSIS RADIATA* Donn. Sm. in Bot. Gaz. 14:30. 1889. [T.: *Von Türckheim 1163* (♀)!]

Shrubs 1.5–2.0 m. tall, the young branches puberulent and glabrescent. Leaf blades elliptic to oblanceolate, 15–25 cm. long, 3–7 cm. broad, obtusely acuminate at the apex, attenuate at the base, subcoriaceous, sericeous and glabrescent above and below, the costa plane above, emersed below, the primary lateral veins prominent above, prominent below, arcuate-ascending; petiole 5–7 mm. long. Inflorescences from the young leafy stems, umbelliform, hirtellous. Staminate inflorescence with the primary peduncle about 3 cm. long, the rhachis 1–2 mm. long, the secondary peduncles 5–13 mm. long. Staminate flowers: 40–60 per inflorescence; pedicel obsolete; calyx tube more or less tubular, about 6.5 mm. long, 1.5 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes subequal, indefinitely papillate within, 1.5–2.0 mm. long, 1 mm. broad; petals absent; anti-sepalous stamens inserted at the orifice, subexserted, the alternisepalous inserted about an anther's length below the orifice, included, the anthers oblong, about 1 mm. long, 0.5 mm. broad, sessile; disc tubular, about 1.5 mm. tall, undulate, glabrous; pistillode tenpin-shaped, on a gynophore, about 2.5 mm. long, minutely setose. Pistillate inflorescence with the primary peduncle 2.5–4.0 cm. long, the rhachis

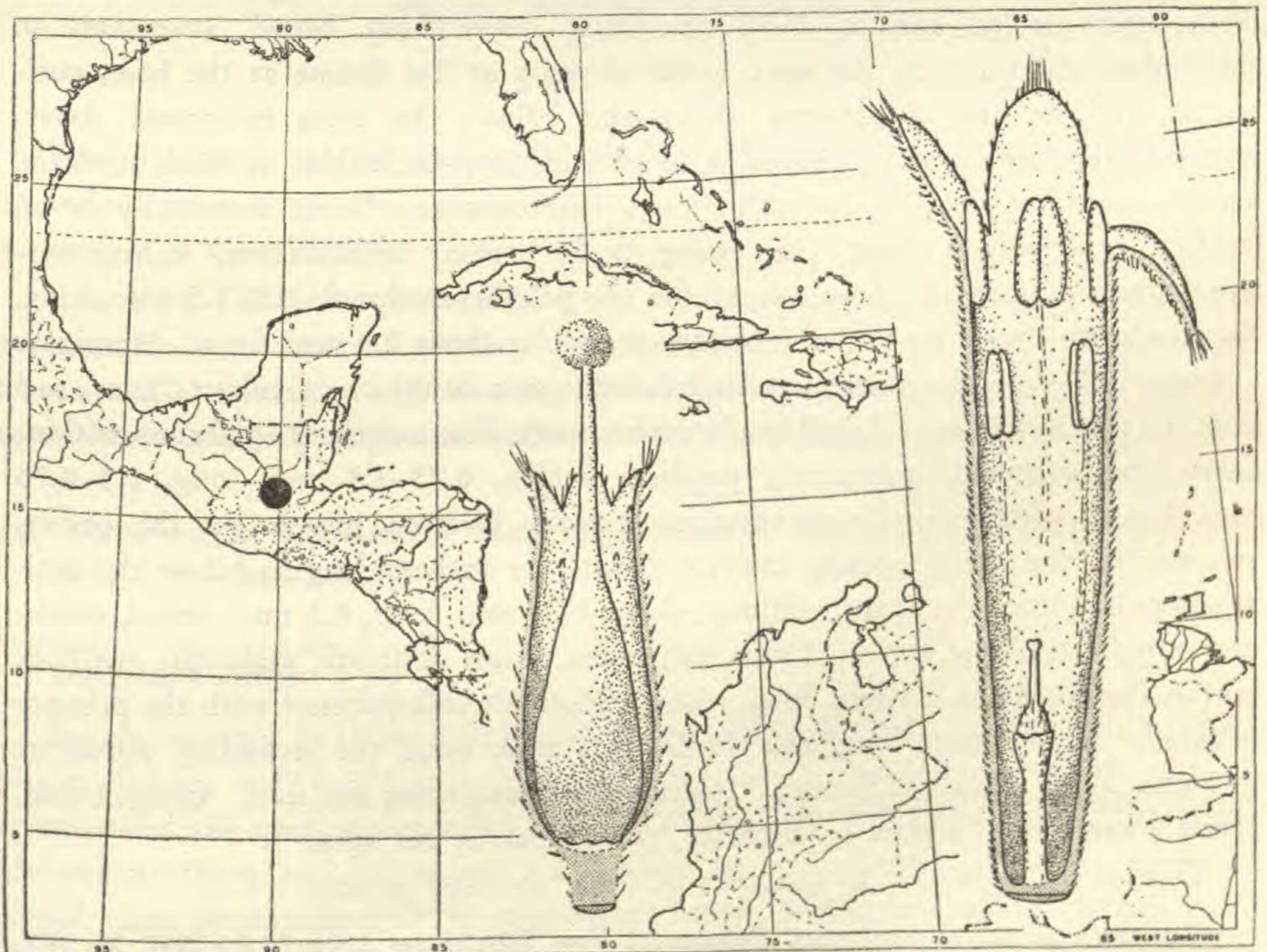


Fig. 34. *Daphnopsis radiata*

about 3 mm. long, the secondary peduncles 2–15 mm. long. Pistillate flowers: 18–32 per inflorescence; pedicel 0.5–1.0 mm. long; calyx tube urceolate, about 3.5 mm. long, 1 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes subequal, indefinitely papillate within, 0.75–1.0 mm. long, 0.5 mm. broad; petals absent; staminodia 8, papilliform; disc annular, free, undulate, glabrous; pistil about 5.5 mm. long, the ovary ovoid, glabrous, the style about 2 mm. long, the stigma capitate, exserted. Drupe ovoid, about 9 mm. long, 6 mm. in diameter, glabrous.

Flowers from December to April at altitudes of 900 to 1700 meters.

GUATEMALA: ALTA VERAPAZ: dense wet limestone forest near Chirreacté, on the Petén highway, *Standley 91876* [F (♂)]; Coban, *Von Türckheim 1163* [US (♀)], *II 1874* [(♀) NY, US]; Finca Sepacuite, *Cook & Griggs 511* [US (♀)]; Finca Mocca, Suchitepéquez, *H. Johnson 103* [US (♀)].

This species appears to be related to the following two species, *D. tuerckheimiana* and *D. selerorum*, on the basis of floral morphology.

The *Von Türckheim* collection *II 1874* is a mixed collection. The New York specimen was collected in April 1908 while the U. S. National Herbarium specimen was collected in May of 1907.

30. *DAPHNOPSIS TUERCKHEIMIANA* Donn. Sm. in Bot. Gaz. 16:13. 1891. [T.: *Von Türckheim 1039* (♀)!]

Small trees, the young branches puberulent or tomentose and glabrescent. Leaf blades more or less elliptic, 7–12 cm. long, 2.0–4.5 cm. broad, acuminate to subcaudate-acuminate at the apex, acute to more or less obtuse at the base, coriaceous, strigose and glabrescent above and below, the costa immersed above, emersed below, the primary lateral veins obscure to prominulous on both surfaces, arcuate-ascending; petiole 2–4 mm. long. Inflorescences borne terminally or on axillary brachyblasts from the young leafy stems, umbelliform, ochraceous-tomentose. Staminate inflorescence with the primary peduncle 0.5–1.0 mm. long, the rhachis to 1 mm. long, the secondary peduncles about 0.5 mm. long. Staminate flowers: 3–7 per inflorescence; pedicel 0.5–2.0 mm. long; calyx tube tubular, 6–8 mm. long, 0.5–0.75 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes subequal, indefinitely papillate within, 0.75–1.5 mm. long, 0.5–0.75 mm. broad; petals absent; antisealous stamens inserted just below the orifice, subexserted, the alternisealous inserted about two anthers' lengths below the antisealous, included, the anthers oblong, about 0.75 mm. long, 0.5 mm. broad, sessile; disc cupuliform, free, 0.5–0.75 mm. tall, more or less undulate, glabrous; pistillode tenpin-shaped, about 1.5 mm. long, setose. Pistillate inflorescence with the primary peduncle about 7 mm. long, the rhachis 1–2 mm. long, the secondary peduncles 2–5 mm. long. Pistillate flowers: 15–20 per inflorescence; not seen. Drupe ovoid, about 7 mm. long, 4 mm. in diameter, puberulent at the apex.

Flowers in September at altitudes of 2500 to 3800 meters.

GUATEMALA: ALTA VERAPAZ: Pansamalá, *Von Türckheim 1039* [(♂) GH, M, NY, P, US]. ZACAPA: cloud forest in ravine bordering Quebrada Alejandria, summit of Sierra de las Minas, vicinity of Finca Alejandria, *Steyermark 29883* [(♀) F, NY].



Fig. 35. *Daphnopsis tuerckheimiana*

Possibly closely related to the following species and differing from it primarily by inflorescence structure. Unfortunately, I have not seen pistillate flowers so I am unable to determine the closeness of the affinity.

The *Von Türckheim* collection 1039 of the U. S. National Herbarium has mounted on it an abnormal flower. This staminate flower is 5-merous, i.e., 5 calyx lobes and 10 stamens, in addition, three pistillodes are present, two of which appear to share a common gynophore, all three are surrounded by a common disc.

31. *DAPHNOPSIS SELERORUM* Gilg, in Verhandl. Bot. Ver. Brandenb. 48:153. 1917. [T.: *Seler 2866* (♀)]

Daphnopsis malacophylla Standl. & Steyerl. in Field Mus. Publ. Bot. 23:68. 1944. [T.: *Steyermark 49104* (♀)!]

Shrubs or trees, 2–10 m. tall, the young branches hispid and glabrescent. Leaf blades elliptic, 3–16 (–27) cm. long, 2–9 cm. broad, acuminate to subcaudate-attenuate at the apex, more or less cuneate at the base, subcoriaceous, strigose and glabrescent above and below, the costa plane above, emersed below, the primary lateral veins prominulous above, prominent below, arcuate-ascending; petiole 3–7 mm. long. Inflorescence borne from the young leafy stems or from axillary brachyblasts, umbelliform, tomentose. Staminate inflorescence with the primary

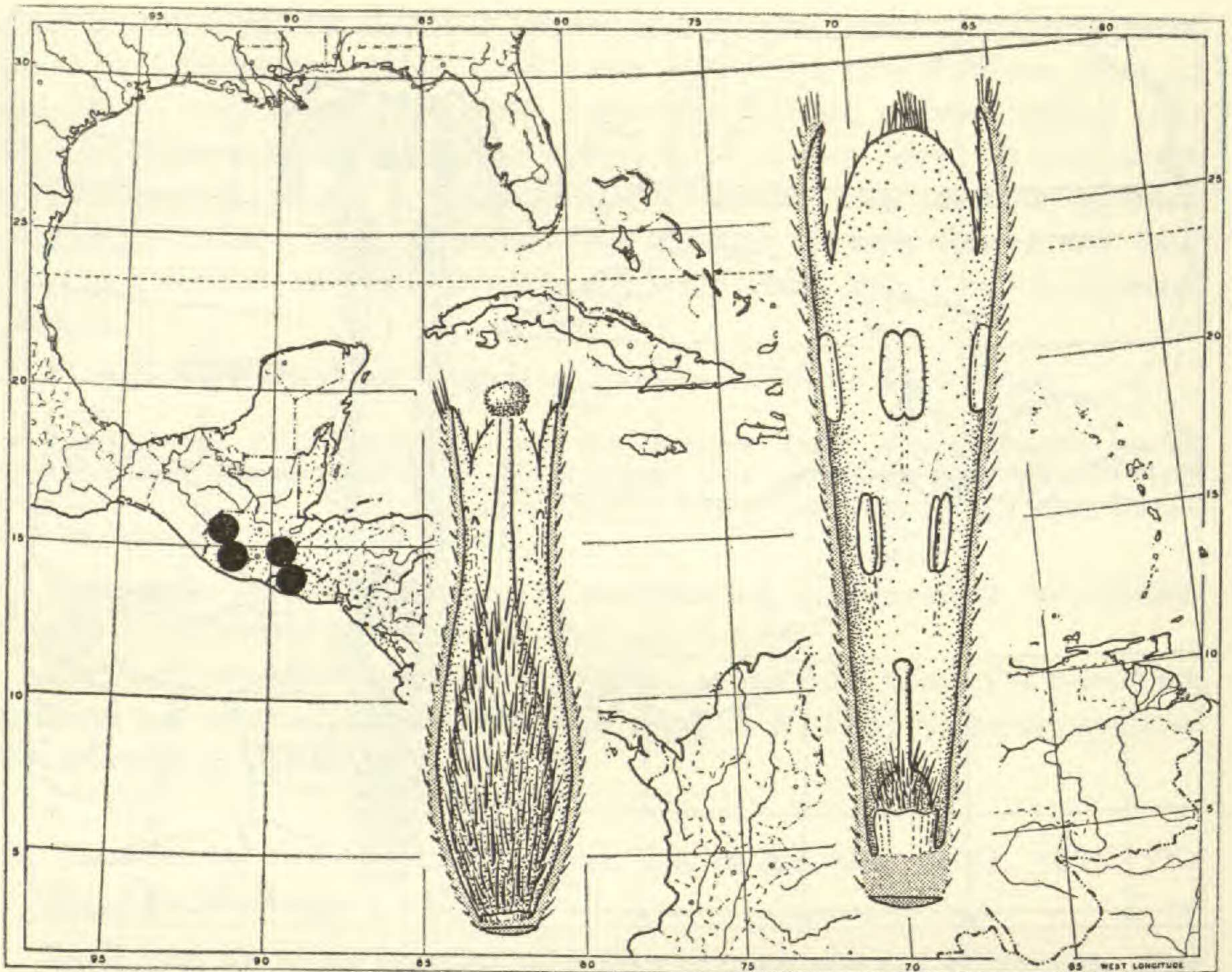


Fig. 36. *Daphnopsis selerorum*

peduncle about 1 cm. long, the rhachis 1–2 mm. long, the secondary peduncles 1–5 mm. long. Staminate flowers: (7–) 30–60 per inflorescence; pedicel about 0.5 mm. long; calyx tube narrowly obconic, 6.0–6.5 mm. long, 1.5–2.0 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes subequal, indefinitely papillate within, 1.5–2.0 mm. long, 1.0–1.5 mm. broad; petals absent; antisepalous stamens inserted at the orifice to about an anther's length below the orifice, subexserted to included, the alternisepalous inserted about two anthers' lengths below the antisepalous, included, the anthers oblong, about 0.75 mm. long, 0.5 mm. broad, sessile; disc cupuliform, free, about 0.5 mm. tall, undulate, glabrous; pistillode lageniform, about 2 mm. long, setose. Pistillate inflorescence with the primary peduncle 1–5 cm. long, the rhachis 1–2 mm. long, the secondary peduncles 2–3 (–7) mm. long. Pistillate flowers: 7–20 (–70) per inflorescence; pedicel obsolete; calyx tube urceolate, 4.0–4.5 mm. long, 1.0–1.5 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes subequal, indefinitely papillate within, 1.0–1.5 mm. long, about 1 mm. broad; petals absent; staminodia 8, papilliform; disc annular, free, about 0.25 mm. tall, pubescent; pistil 4.5–5.5 mm. long, the ovary ovoid, hairy, the style about 2.5 mm. long, the stigma capitate, exserted. Drupe ovoid, 7–8 mm. long, 3–5 mm. broad, pubescent, ultramarine to black.

Found at altitudes of 1200 to 3000 meters where it flowers during July and August.

GUATEMALA: CHIQUIMULA: Cerro Tixixí, 3-5 miles n. Jocotán, *Steyermark* 31569 [A (♂), F (s)]. HUEHUETENANGO: wet cloud forest at Cruz de Limón, between San Mateo Ixtatán and Nucá, *Steyermark* 49820 [F (♂)], 49844 [(♀) F, US]; Cerro Huitz, between Mimanhuitz and Yulhuitz, *Steyermark* 48559 [F (♀)], 48646 [US (♀)]; Cerro Cananá, between Nucapuxlac and Cananá, *Steyermark* 49104 [(♀) F, US]; vicinity of Maxbal, about 17 mi. n. of Barillas, *Steyermark* 48867 [(♂) A, F]; Cerro Victoria, near Barillas, *Steyermark* 49743 [(♂) A, F], 49744 [(♀) F, US]. QUETZALTENANGO: between Finca Pirineos and Finca Soledad, lower south-facing slopes of Volcán Santa María, between Santa María de Jesús and Calahuaché, *Steyermark* 35526 [F (♀)]; along old road between Finca Pirineos and Patzulín, *Standley* 86942 [F (♂)], 86961 [F (♂)], 86988 [F (♂)]; along great barranco between Finca Pirineos and San Juan Patzulín, *Steyermark* 33642 [F (♂)]; Finca Pirineos, *Standley* 68337 [F (♀)]; near Calahuaché, *Standley* 67129 [(?) A, F]; along Quebrada San Gerónimo, Finca Pirineos, *Steyermark* 33428 [F (♀)]; Palmar, *Skutch* 1422 [F (♂)].

EL SALVADOR: SANTA ANA: Cerro Miramundo, above Hacienda Los Planos, n.e. of Metapán, *Carlson* 919 [F (♂)].

According to *Steyermark* it is known as *palo de chonta*.

This species is rather variable, particularly in leaf shape and size, flower number and overall pubescence. These differences may be due to water availability or altitudinal factors.



Fig. 37. *Daphnopsis brevifolia*

32. *DAPHNOPSIS brevifolia* Nevl. spec. nov.

Frutices; ramis juvenibus pubescentibus usque glabrescentibus. Folia elliptica usque oblanceolata vel obovata 2.0–6.5 cm. longa 0.7–1.7 cm. lata apice acuta usque acuminata basi cuneata subcoriacea puberulentia usque glabrescentia, venis primariis lateralibus arco-ascendentibus; petiolo 3–4 mm. longo. Inflorescentia umbelliformis; pedunculo primario 2–6 mm. longo. rhachide 3–5 mm. longo; pedunculis secundariis ca. 0.25 mm. longis. Flores masculi 6–10 per inflorescentia; pedicello 3.0–3.5 mm. longo; calyce campanulato 2.0–2.5 mm. longo 1.5 mm. lato extus hispidulo intus glabro; calycis lobis subequalibus intus pubescens ca. 2.5 mm. longis 1.5 latis; petalis 0; staminibus in planis 2, antheris oblongis ca. 0.75 mm. longis 0.5 mm. latis sessilibus filamentis 0.5–1.0 mm. longis; disco humili adnato glabro; pistillodio ampulliformi apice quamquam dilatato ca. 1.5 mm. longo, pubescente. Flores feminei et fructus non vidi. HOLOTYPUS: *Purpus 6271* (MO).

Flowers in July and August.

MEXICO: VERACRUZ: barranca de Zacuapán, *Purpus 4114* [(♂) A, F, MO, US]; Baños del Carrizal, *Purpus 6271* [(♂) A, F, MO, NY, US]; barranca San Martín *Purpus 4114*^{bis} [A (♂)].

Superficially the specimens of this species appear quite similar to those of *D. mollis* but differs from it, primarily, by the lack of petals.

Purpus 4114 is composed of two collections: those collected at barranca de Zacuapán in July of 1907 and those collected at San Martín in July of 1916.

33. *DAPHNOPSIS PUNCTULATA* Urb. Symb. Ant. 9:407. 1925. [T.: *Ekman 14214* (♂)!]

Shrubs, the young branches minutely black-punctate and glabrescent. Leaf blades oblanceolate-acuminate, 2–7 cm. long, 1–3 cm. broad, subcaudate-acuminate at the apex, cuneate at the base, thin-coriaceous, glabrous above and below, the

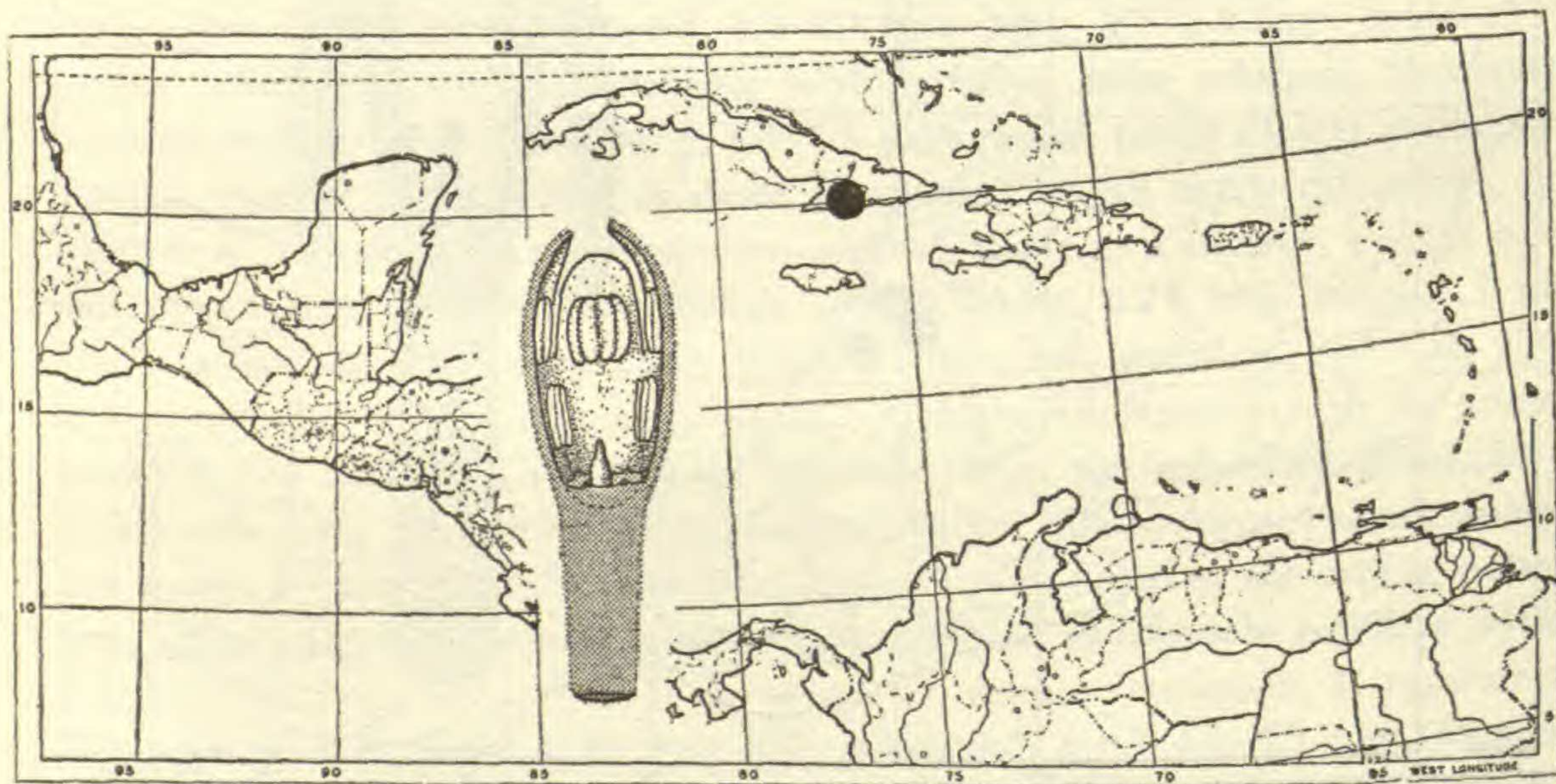


Fig. 38. *Daphnopsis punctulata*

costa plane above, emersed below, the primary lateral veins prominulous above and below, arcuate-ascending, with a conspicuous submarginal vein; petiole to 3 mm. long. Inflorescence borne from the younger leafy or bracteate stems, umbelliform or dense racemiform, minutely black-punctate, the primary peduncle 1–3 mm. long, the rhachis 0.5–4.0 mm. long, the secondary peduncles to 1 mm. long. Staminate flowers: 3–15 per inflorescence; pedicel about 1.5 mm. long; calyx tube campanulate (?), about 1 mm. long, 0.5 mm. broad at the orifice, glabrous; calyx lobes subequal, indefinitely papillate within, about 1 mm. long, 0.5–0.75 mm. broad; petals absent; antisepalous stamens inserted at the orifice, exserted, the alternisepalous inserted slightly below the orifice, included, the anthers oblong, 0.5–0.75 mm. long, 0.5 mm. broad, sessile; disc basally adnate, only several small lobes, free, glabrous; pistillode tenpin-shaped, about 0.5 mm. long, glabrous. Pistillate flowers and fruit not seen.

Flowers in August, found from 600 to 900 meters.

CUBA: ORIENTE: Pico Turquino, *Bro. León 10804* [MO (s), NY (δ)]; Sierra Maestra, on the water divide between Río Yara and Río Plata, in "monte frio", *Ekman 14214* [(δ)NY, S], *5613* [S (?)].

This poorly known species is easily recognized by the black punctations on young stems and inflorescences.

34. *DAPHNOPSIS FICINA* Standl. & Steyerm. in *Field Mus. Publ. Bot.* 22:254. 1940. [T.: *Salas 1442* (φ)!]

Shrubs or small trees 2–5 m. tall, the young branches minutely puberulent and glabrescent. Leaf blades elliptic to oblanceolate, 3–11 cm. long, 1–4 cm. broad, acute to somewhat obtuse at the apex, cuneate at the base, subcoriaceous, sericeous and glabrescent above and below, the costa immersed above, emersed



Fig. 39. *Daphnopsis ficina*

below, the primary lateral veins prominulous above, prominent below, arcuate-ascending, the margin somewhat thickened; petiole 2–3 mm. long. Inflorescences borne from the young leafy stems, umbelliform or rarely subracemiform. Staminate inflorescence with the primary peduncle 0.8–4.0 (–6.0) cm. long, the rhachis 1–3 mm. long, the secondary peduncles 2–12 mm. long. Staminate flowers: 6–30 per inflorescence; pedicel obsolete; calyx tube tubular, 2.5–3.5 mm. long, ca. 1 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes subequal, puberulent within, about 1 mm. long and broad; petals absent or rarely with the slightest suggestion of an annulus; antisepalous stamens inserted at the orifice, subexserted, the alternisepalous inserted a little below the orifice, included, the anthers suborbicular, about 0.5 mm. long and broad, sessile; disc completely adnate or rarely with the margin free, glabrous; pistillode tenpin-shaped, about 1.5 mm. long, glabrous. Pistillate inflorescence with the primary peduncle 1–3 cm. long, the rhachis 1–3 mm. long, the secondary peduncles 2–6 mm. long. Pistillate flowers: 3–9 per inflorescence; pedicel 0.5 mm. long; calyx tube urceolate or sometimes campanulate, 1.5–2.5 mm. long, 1.0–1.5 mm. broad at the orifice, puberulent without, glabrous within; calyx lobes subequal, minutely puberulent within, 1 mm. long, 0.75–1.0 mm. broad; petals as in staminate flowers; staminodia 8, squamelliform; disc completely adnate; pistil 2–3 mm. long, the ovary ovoid, glabrous, the stigma minutely capitate, exserted. Drupe ovoid, about 11 mm. long, 5 mm. in diameter, black.

Found at altitudes of 1600 to 2500 meters. Flowers from December to May.

GUATEMALA: BAJA VERAPAZ: mountainside n. of Santa Rosa, *Standley 69919* [(♀) F, NY]. GUATEMALA: in forests of Manzanote, La Cieneguilla, San José Pinula, *Salas 653* [US (♂)], *1442* [F (♂)]; cloud forest area, Montaña de las Nubes, about 20 kms. w. of San José Pinula, *Williams & Molina 15270* [(♂) A, US]; without precise locality, *Aguilar 719* [F (?)]. JALAPA: in old clearings in mixed pine cloud forest, Montaña de las Nubes near Soledad, *Williams 14233* [F (♂)]; Potrero Carrillo, at Hierba Buena, 14 mi. n.e. of Jalapa, *Steyermark 33037* [F (♀)]. QUICHÉ: Chichicastenago, *Hunnewell 15197* [A (♂)], *Standley 62417* [(?) F, US], *62428* [(?) A, F]; without precise locality, *Aguilar 778* [F (?)]. SANTA ROSA: Laguna de Ayarza, *Heyde & Lux 4071* [(♀) A, MO, NY, US]. ZACAPA: trail between Santa Rosalía de Mármol and Vegas, *Steyermark 42924* [F (♂)].

MEXICO: CHIAPAS: Letrero, near Siltepec, *Matuda 4338* [(♂) A, F, MO, NY, US]; Saxchanal, in pineland, *Matuda 4298* [(♂) A, F, MO, NY], *17803* [F (♀)].

According to Salas this species is known as *chillo*.

A majority of the specimens belonging to this species have been misidentified as *D. lindonii*, a name superceded by *D. americana*. The mistake is easily made because of vegetative and inflorescence similarities. The inflorescences of the two species appear to be very similar at first glance but their construction is entirely different. In *D. americana* the flowers are borne on very short secondary peduncles and rather long pedicels, whereas the flowers of *D. ficina* are borne on long secondary peduncles and very short or obsolete pedicels.

This species appears to be variable in some features which are not ordinarily variable in other species. In *Hunnewell 15197* a fairly well delineated faucal annulus is to be found, a condition lacking in other specimens. In *Steyermark 42942* the disc of the staminate flowers, which is usually completely adnate, has

a decidedly free margin. Another collection of interest, *Heyde & Lux 4071*, has flowers in which the calyx tube becomes extremely campanulate.

SUBGENUS II. NEIVIRA (Griseb.) Nevl. stat. nov.

Section *Neivira* Griseb. Symb. Fl. Argent. 133. 1879. [T.: *D. racemosa* Griseb.]

KEY TO THE SPECIES

- a. Calyx tube glabrous or villous within, the lobes puberulent within, the disc of free lobes, annular or cupuliform.
- b. Staminate flowers with the disc of free lobes; pistillate flowers with the disc annular. Plants of Brasil (Minas Gerais, Rio de Janeiro).....35. *D. UTILIS*
- bb. Staminate and pistillate flowers with the disc cupuliform.
- c. Calyx tube glabrous within; pistillate flowers with 8 or 0 staminodia.
- d. Flowers in dense racemiform inflorescences; pistillate flowers with 8 staminodia.
- e. Staminate flowers not seen; pistillate flowers 5–12 per inflorescence, the calyx lobes 1.0–1.5 mm. long, 0.75–1.25 mm. broad, the disc to 1 mm. tall, the ovary ovoid. Plants of Ecuador.....36. *D. ESPINOSAE*
- ee. Staminate flowers 5–6 per inflorescence, the antisealous stamens exerted, the alternisealous stamens subexserted, the anthers subsessile, the disc deeply and irregularly lobed, the pistillode ovoid, glabrous; pistillate flowers 1–4 per inflorescence, the calyx lobes about 0.75 mm. long, 0.75 mm. broad, the disc to 0.5 mm. tall, the ovary broadly fusiform. Plants of Brasil (Rio de Janeiro).
.....37. *D. ALPESTRIS*
- dd. Flowers in lax racemiform inflorescences; pistillate flowers with 0 staminodia. Plants of Brasil (Rio de Janeiro).....38. *D. SCHWACKEANA*
- cc. Calyx tube sparsely to densely villous within.
- f. Flowers in lax racemiform inflorescences; pistillate flowers with 8 staminodia.
- g. Leaves subauriculate to auriculate at the base, thin-coriaceous; staminate flowers 4–17 per inflorescence, the calyx tube tubular, obconic or somewhat campanulate, 1.5–2.0 mm. broad at the orifice, the calyx lobes 1.0–1.5 mm. long, 0.75–1.5 mm. broad, the anthers sessile or on filaments to 0.25 mm. long, the pistillode glabrous or villous; pistillate flowers (1–)3–19 per inflorescence, the pedicel essentially obsolete, the ovary broadly fusiform, glabrous or villous. Plants of Argentina, Brasil (Ceará, Mato Grosso, Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Sul, São Paulo, Sta. Catarina), Paraguay and Uruguay.
.....39. *D. RACEMOSA*
- gg. Leaves cuneate at the base, thick-coriaceous; staminate flowers 15–25 per inflorescence, the calyx tube broadly campanulate, about 4 mm. broad at the orifice, the calyx lobes 2.0–2.5 mm. long, 1.5–1.75 mm. broad, the anthers on filaments 0.5–1.0 mm. long, the pistillode villous; pistillate flowers 8–25 per inflorescence, the pedicel about 1.5 mm. long, the ovary ovoid, villous at least towards the apex. Plants of Brasil (Rio de Janeiro).....40. *D. CORIACEA*
- ff. Flowers in dense racemiform inflorescences; pistillate flowers lacking staminodia.
- h. Leaves 4.5–14.0 cm. long; staminate flowers with the calyx tube obconic, 3–4 mm. long, 1–2 mm. broad at the orifice, hispidulous without, the petals connate into an obscure faucal annulus, the filaments about 0.25 mm. long, the pistillode fusiform, 3.0–4.5 mm. long; pistillate flowers with the calyx tube about 1 mm. long, hispidulous without, glabrous within, the petals connate into an obscure faucal annulus, the ovary ovoid, glabrous or villous at the base. Plants of Brasil (Minas Gerais, Paraná, Rio Grande do Sul, São Paulo) and Uruguay.
.....41. *D. SELLOWIANA*
- hh. Leaves 3–30 cm. long; staminate flowers with the calyx tube campanulate, 1.5–3.0 mm. long, 1.5–4.0 mm. broad at the orifice, tomentose without, the petals absent, the filaments 0.25–1.5 mm. long, the pistillode ovoid, 2.0–3.5 mm. long; pistillate flowers with the calyx tube 1.0–1.75 mm. long, tomentose without, glabrous or sparsely villous within, the petals absent, the ovary obovoid, densely villous. Plants of Brasil (Minas Gerais, Paraná, Goiás, Rio de Janeiro, Sta. Catarina, São Paulo).....42. *D. BETA*
- aa. Calyx tube villous (sometimes in *D. martii*) or glabrous within, the lobes indefinitely papillate within, the disc cupuliform.
- i. Staminate flowers with the pistillode villous; pistillate flowers with the staminodia 4 or 0.

- j. Staminate flowers with the calyx tube about 4.5 mm. long, glabrous within, the petals connate into an obscure faucal annulus, the anthers about 0.25 mm. long and broad, the pistillode obovoid; pistillate flowers with the calyx tube campanulate, glabrous within, the petals absent, the staminodia absent, the ovary glabrous. Plants of Brasil (Bahia and Pernambuco).....43. *D. SANCTAE-TERESAE*
- jj. Staminate flowers with the calyx tube about 1.5 mm. long, glabrous or villous within, the petals absent, the anthers about 0.75 mm. long and broad, the pistillode fusiform; pistillate flowers with the calyx tube urceolate, glabrous or villous within, the petals absent, the staminodia 4, the ovary villous. Plants of Brasil (Rio de Janeiro).....44. *D. MARTII*
- ii. Staminate flowers with the pistillode glabrous; pistillate flowers not seen.
- k. Staminate flowers with the pedicel obsolete, the calyx tube obconic, the anthers on filaments about 1.5 mm. long, the pistillode fusiform. Plants of Brasil (Rio de Janeiro).....45. *D. GEMMIFLORA*
- kk. Staminate flowers with the pedicel to 1.5 mm. long, the calyx tube campanulate, the anthers sessile, the pistillode ovoid. Plants of Bolivia.....46. *D. BOLIVIANA*

35. *DAPHNOPSIS UTILIS* Warm. in Kjoeb. Vidensk. Meddel 318. 1871. [T.: *Glaziou 2963* (♀)!]

Daphnopsis sessiliflora Griseb. ex Taub. in Engl. Bot. Jahrb. 12, Beibl. 27:8. 1890. [T.: *Glaziou 17747* (♂)!]

Shrubs, if not trees. Leaf blades elliptic to oblanceolate or obovate, 2–8 cm. long, 0.5–1.5 cm. broad, obtuse to acute at the apex, cuneate at the base, thin-coriaceous, glabrous above and below, the costa plane above, emersed below, the primary lateral veins obscure above, prominulous below, arcuate-ascending, the margin revolute; petiole 1–2 mm. long. Inflorescences borne from the young leafy or defoliated nodes, few-flowered, dense subracemiform, the primary peduncle 0.25–1.0 mm. long, the rhachis 0.25–0.5 mm. long, the secondary peduncles 0.25–1.5 mm. long. Staminate flowers: 2–4 per inflorescence; pedicel obsolete; calyx tube campanulate, 1–2 mm. long, 1.0–1.25 mm. broad at the orifice, essentially glabrous without, sparsely to densely villous within; calyx lobes unequal, indefinitely papillate within, the outer to 1.75 mm. long, 0.5–0.75 mm. broad, the inner 1.75 mm. long, 1.0–1.5 mm. broad; petals connate into an extremely obscure faucal annulus; antisepalous stamens inserted just above the orifice to 1 mm. above the orifice, exserted, the alternisepalous inserted just below the orifice, exserted, the filaments 1.0–2.5 mm. long, the anthers orbicular, 0.25–0.5 mm. long and broad;

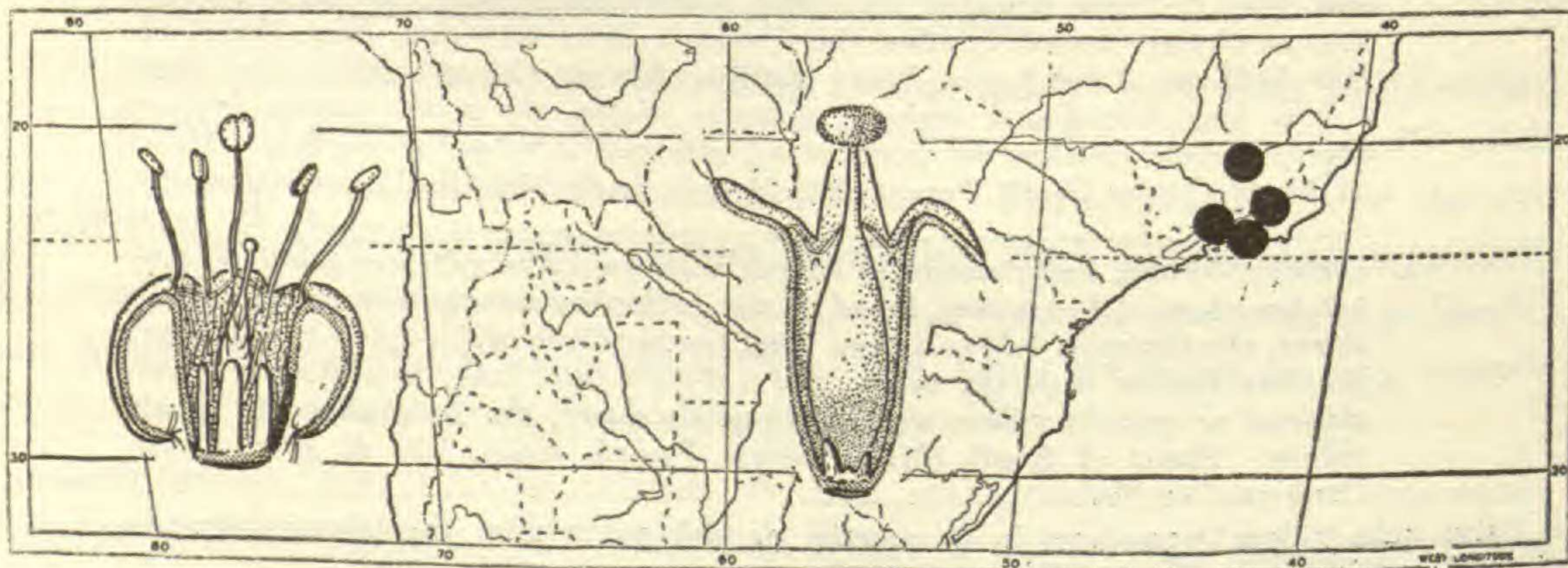


Fig. 40. *Daphnopsis utilis*

disc of several free lobes, 0.5–1.25 mm. tall, glabrous; pistillode fusiform, borne on a gynophore, 1.75–3.5 mm. long, sparsely to densely villous. Pistillate flowers: 2–5 per inflorescence; pedicel obsolete; calyx tube suburceolate to campanulate, about 2 mm. long, 1 mm. broad at the orifice, glabrous without, glabrous within; calyx lobes subequal, indefinitely papillate within, about 1 mm. long, 0.5 mm. broad; petals connate into an obscure faucal annulus; staminodia 8, papilliform; disc annular, free, irregularly lobed, glabrous; pistil to 3 mm. long, the ovary fusiform, glabrous, the style 0.5–1.0 mm. long, the stigma capitate, exerted. Drupe not seen.

Flowers in February and March.

BRASIL: MINAS GERAIS: Lagôa Santa, *Warming* 734 [C (♂), NY (?), W (s)]; Itabira do Campo, *Mattos s. n.* [R (♂)]. RIO DE JANEIRO: Alto Macabé, *Glaziou s. n.* [P (♀)], 2963 [C (♀), F (fragment s), RB (♀)]; District Federal, *Ducke s. n.* [MO (♂)]; Serra Carioca, D. Federal, *Barbosa & Fidalgo* 3 [RB (♂)], *Occhioni* 362 [RB (?)]; Sommet du Morro Queimado, *Glaziou* 2963^{bis} [P (♂)]; Serra dos Orgãos, *Glaziou* 17747 [(♂) C, F, NY, P, RB, US]; Tijuca, *Schwacke* 7322 [RB (♂)], *Glaziou s. n.* [R (?)], *Ule* 4382 [R (♀)]; Estr. do Redentor, *Packolt & Freire* 480 [R (♂)]; without precise locality, *Glaziou* 4070 [C (♀)].

Known as *embira branca*.

In the original description of this species *Warming* cited *Glaziou* 2963 and 4070. I have chosen *Glaziou* 2963 (C) as the lectotype because the location of the 4070 specimen is unknown. It is to be noted that *Glaziou* 2963 is a split collection, i.e., the collection from Alto Macabé was made in 1869 and the collection at the Sommet de Morro Queimado was made in 1880.

36. *DAPHNOPSIS ESPINOSAE* Monachino, in *Phytologia* 2:212. 1947. [T.: *Espinosa* 205 (♀)!]

Shrubs or trees (?), the young branches glabrescent. Leaf blades elliptic to

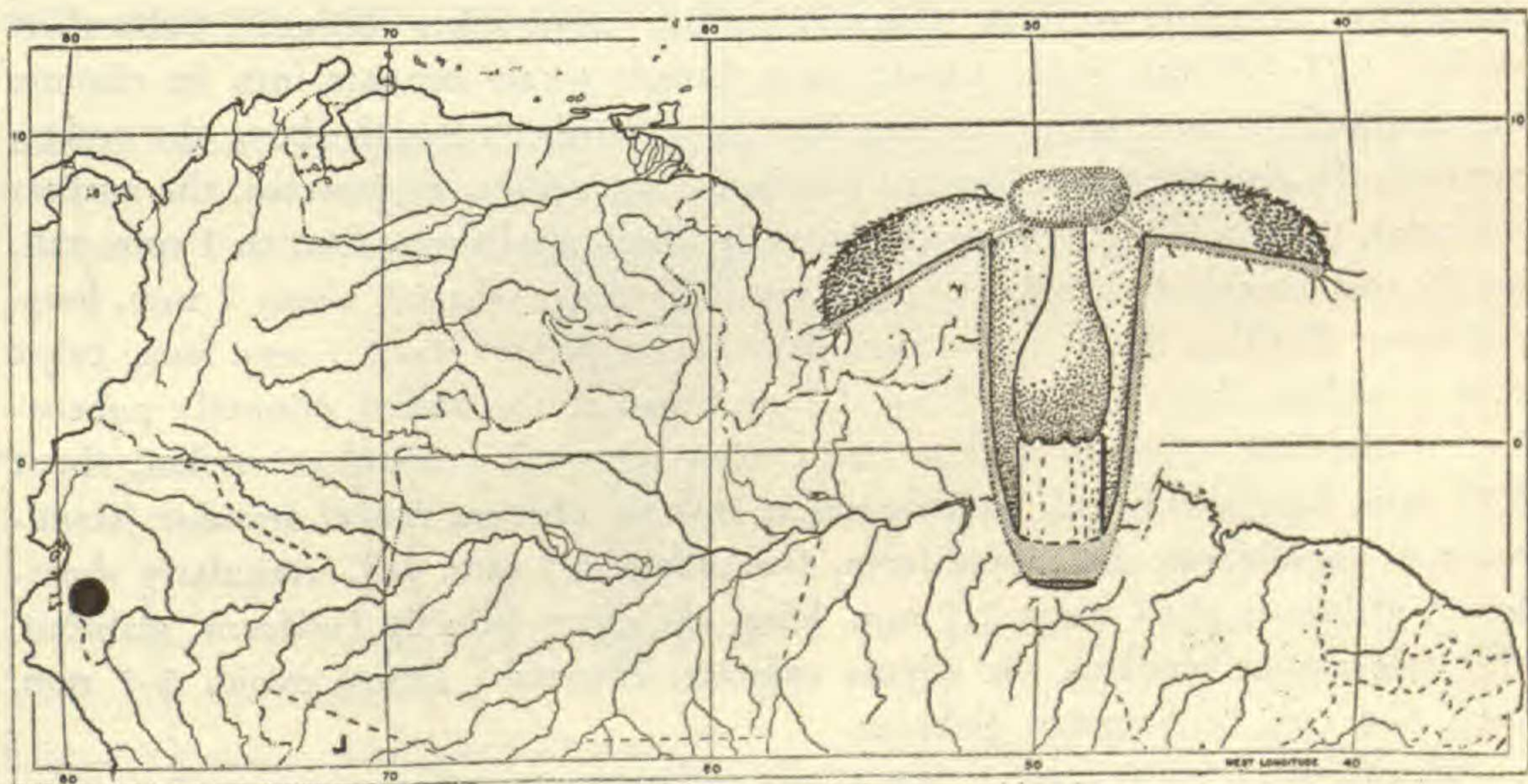


Fig. 41. *Daphnopsis espinosae*

oblanceolate, 3–8 cm. long, 1–3 cm. broad, acute at the apex, broadly cuneate at the base, thin-subcoriaceous, glabrous above and below, the costa plane above, emersed below, the primary lateral veins prominent above and below, arcuate-ascending; petiole 2–4 mm. long. Inflorescences borne from the young leafy or defoliated nodes, dense racemiform, tomentulose, the primary peduncle 3–14 mm. long, the rhachis 0.5–4.0 mm. long, the secondary peduncles 0.5–2.0 mm. long. Staminate flowers not seen. Pistillate flowers: 5–12 per inflorescence; pedicel to 0.5 mm. long; calyx tube campanulate, about 2.5 mm. long, 1.25 mm. broad at the orifice, sparsely puberulent without, glabrous within; calyx lobes subequal, puberulent within, 1.0–1.5 mm. long, 0.75–1.25 mm. broad; petals connate into an obscure faucal annulus; staminodia 8, papilliform; disc cupuliform, free, erose, to 1 mm. long, glabrous; pistil about 3 mm. long, the ovary ovoid, glabrous, the style about 0.75 mm. long, the stigma capitate, exserted. Drupe not seen.

Flowers in April at 2400 to 2500 meters.

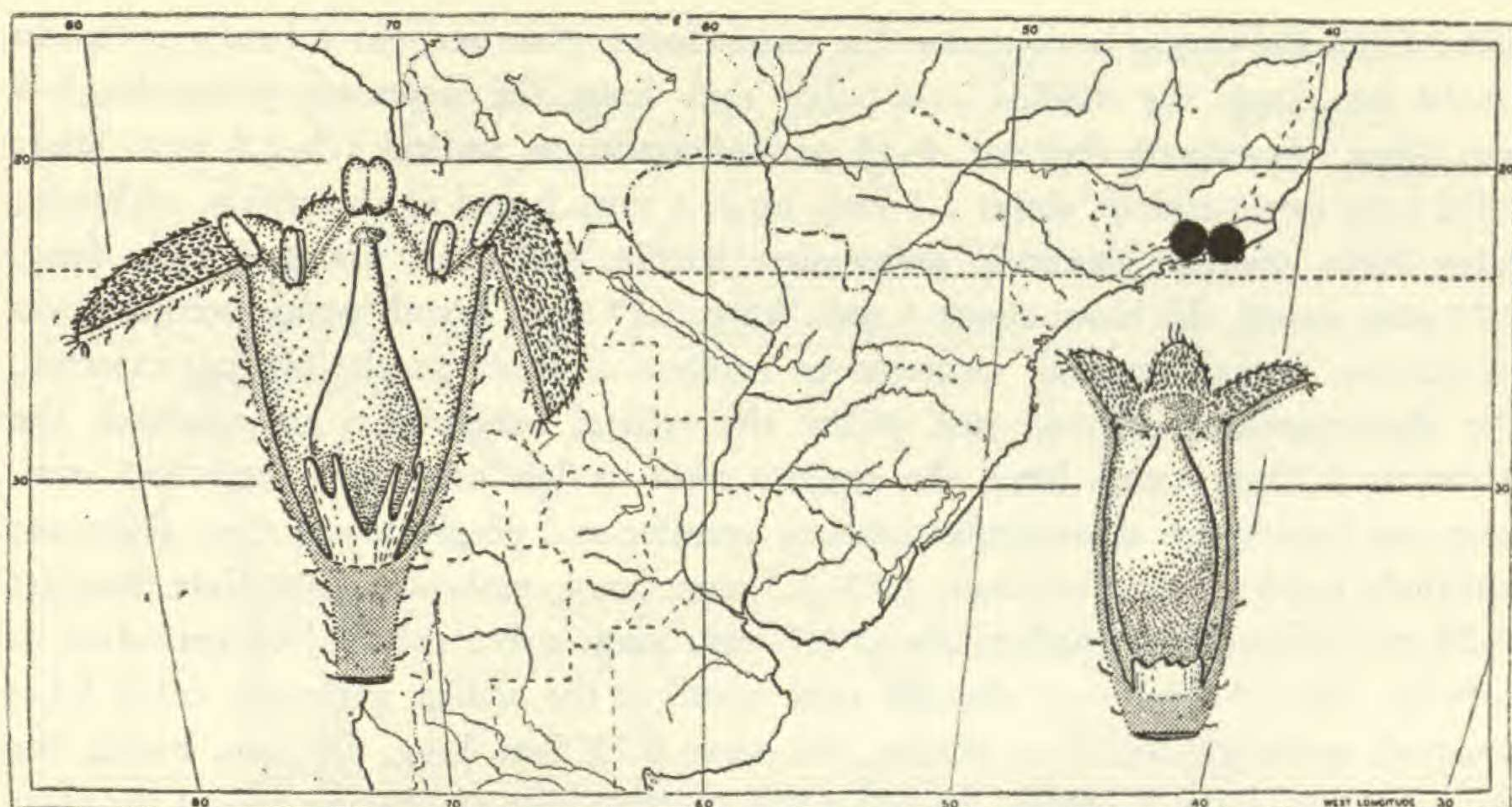
ECUADOR: LOJA: Namanola, *Espinosae* 205 [NY (♀)], *s. n.* [NY (♀)].

37. *DAPHNOPSIS ALPESTRIS* (Gardn.) Benth. & Hook. f. Gen. 3:192. 1880.

Lagetta alpestris Gardn. in Hook. Lond. Journ. 4:135. 1845. [T.: *Gardner* 5849 (♀)!]

Shrubs to 1.5 m. tall, the young branches glabrous. Leaf blades elliptic, obovate or oblanceolate, 2–5 cm. long, 1.0–2.5 cm. broad, obtuse to subacute at the apex, cuneate at the base, thin-coriaceous, glabrous above and below, the costa plane above, emersed below, the primary lateral veins prominulous above and below, arcuate-ascending; petiole 1–3 mm. long. Inflorescences borne from the young leafy or defoliated nodes, dense racemiform, sparsely strigillose and glabrescent, the primary peduncle 4–16 mm. long, the rhachis 1–2 mm. long, the secondary peduncles to 1 mm. long. Staminate flowers: 5–6 per inflorescence; pedicel about 1 mm. long; calyx tube campanulate, 2.0–2.5 mm. long, 1.0–1.5 mm. broad at the orifice, strigillose without, glabrous within; calyx lobes subequal, puberulent within, 1.25–1.5 mm. long, 1.0–1.5 mm. broad; petals connate into an obscure faucal annulus; antisepalous stamens inserted an anther's length above the orifice, exserted, the alternisepalous inserted just below the orifice, subexserted, the anthers orbicular, 0.5 mm. long and broad, subsessile; disc cupuliform, free, to 1 mm. tall, deeply and irregularly lobed, glabrous; pistillode tenpin-shaped, about 2 mm. long, glabrous. Pistillate flowers: 1–4 per inflorescence; pedicel about 1 mm. long; calyx tube urceolate, about 2.5 mm. long, 1 mm. broad at the orifice, minutely puberulent at the base, glabrous within; calyx lobes subequal, puberulent within, about 0.75 mm. long and broad; petals connate into an obscure faucal annulus; staminodia 8, papilliform; disc cupuliform, free, about 0.5 mm. tall, irregularly short-lobed, glabrous; pistil about 2.5 mm. long, the ovary broadly fusiform, glabrous, the style almost obsolete, the stigma capitate, exserted. Drupe ovoid, 5–7 mm. long, 3–4 mm. in diameter, glabrous.

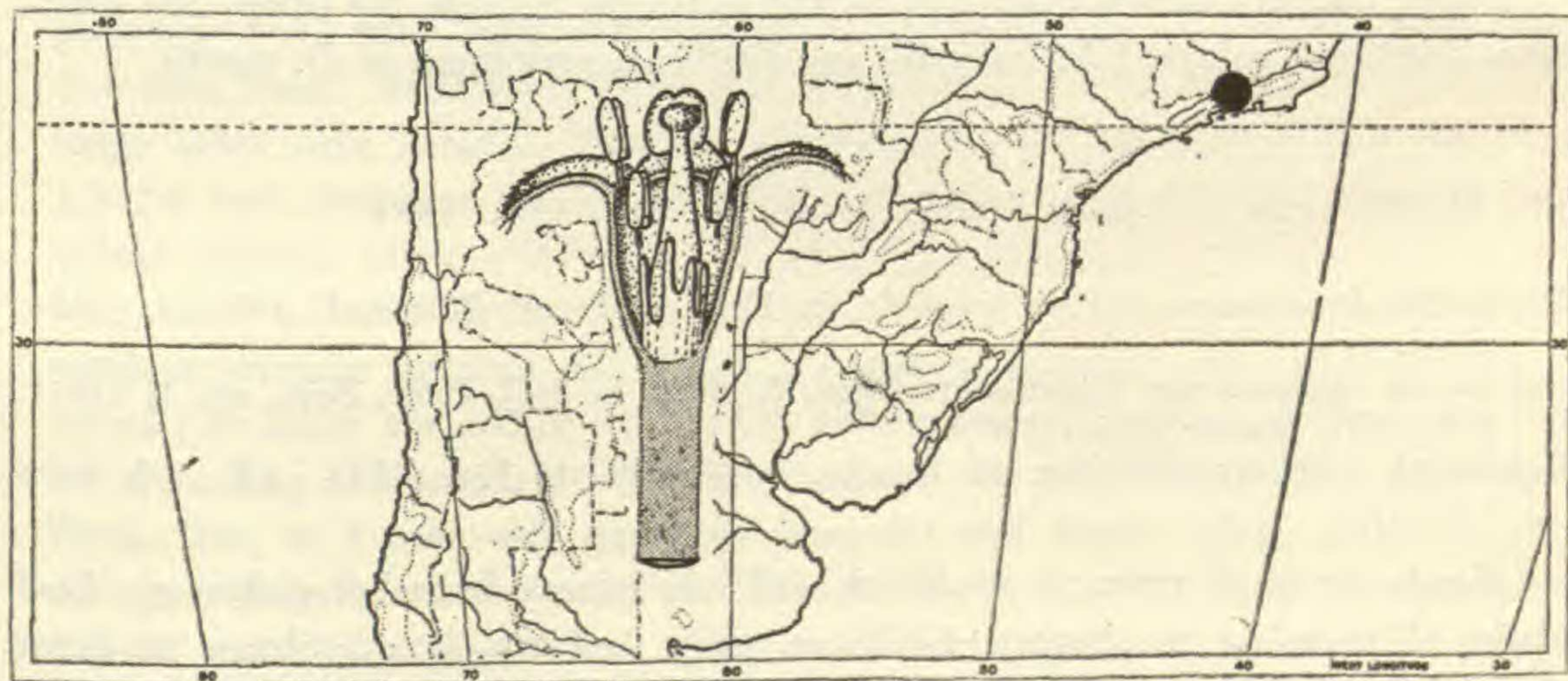
Known from 2000 meters. Flowers from January to May.

Fig. 42. *Daphnopsis alpestris*

BRASIL: RIO DE JANEIRO: Organ Mts., *Brade 11501* [R (♀)], *Gardner 5849* [(♀) BM, K, P, W] Rio Orgãos, *Glaziou 3654* [(♂) C, F, P]; Petropolis, *Glaziou 17200* [C (♀), F (?), P (♀)]; Alto Macabé, *Glaziou 17746* [(♀) C, P, US]; Itatiaia, Planalto, *Porto 2761* [MO (♀)].

38. DAPHNOPSIS SCHWACKEANA Taub. in Engl. Bot. Jahrb. 12: Beibl. 27:6. 1890. [T.: *Glaziou 6698* (♂)!]

Shrubs, the young branches glabrous. Leaf blades oblanceolate or narrowly elliptic, 10–33 cm. long, 2.0–7.5 cm. broad, acute to subcaudate-acuminate at the apex, cuneate at the base, thin-coriaceous, glabrous above and below, the costa plane to immersed above, emersed below, the primary lateral veins prominulous above, prominent below, arcuate-ascending; petiole 8–12 mm. long. Inflorescences

Fig. 43. *Daphnopsis schwackeana*

borne from the young leafy nodes, lax racemiform, glabrous, the primary peduncle 10–30 mm. long, the rhachis 3–10 (–20) mm. long, the secondary peduncles 1–4 mm. long. Staminate flowers: 9–15 per inflorescence; pedicel 1.5–2.0 mm. long; calyx tube campanulate, about 1.5 mm. long, 1 mm. broad at the orifice, glabrous; calyx lobes unequal, minutely puberulent within, the outer about 1 mm. long, 0.75 mm. broad, the inner about 1 mm. long, 1.25 mm. broad; petals connate into an obscure faucal annulus; antisepalous stamens inserted at the orifice, exerted, the alternisepalous inserted just below the orifice, subexserted to exerted, the filaments 0.25–0.5 mm. long, the anthers more or less orbicular, about 0.5 mm. long and broad; disc of irregular lobes or annular and deeply lobed, free, glabrous; pistillode more or less fusiform, 1.75–2.5 mm. long, glabrous. Pistillate flowers: 9–20 per inflorescence; pedicel about 1.5 mm. long; calyx tube subcampanulate to tubular, 2.0–2.5 mm. long, about 1 mm. broad at the orifice, glabrous; calyx lobes unequal, sparsely puberulent within, the outer 0.75 mm. long, 0.5 mm. broad, the inner 1.0 mm. long, 0.75 mm. broad; petals connate into an obscure faucal annulus; staminodia absent; disc cupuliform, free, deeply and irregularly lobed, about 0.75 mm. tall, glabrous; pistil obovoid, 2.0–2.5 mm. long, glabrous, the style almost obsolete, the stigma capitate, exerted. Immature drupe fusiform, about 6 mm. long, 3 mm. in diameter, glabrous.

Flowers in January.

BRASIL: RIO DE JANEIRO: Restinga de Maria, Schwacke 5411 [RB (♂)]; Alto Macabé, Glaziou 18467 [(♂) C, P]; Mauã, Ule 4686 [R (♀)]; Teresopolis, Fazenda Boa Fé, Emygdio 67 [R (♂)], Emygdio & Filho 79 [R (♂)], Velloso 433 [R (♂)], 453 [R (♂)], 466 [R (♀)], 469 [R (♂ ♀)]. WITHOUT PRECISE LOCALITY: Glaziou 6698 [(♂) C, P], Bowie & Cunningham s. n. [BM (♂)], Pohl s. n. [M (♂)].

Domke applied the earlier name *gemmiflora* to this species. His decision was based upon observation of the type material of *Coleophora gemmiflora* Miers. Although I have been unable to obtain this same material, except by photograph, I am forced to disagree with Domke and accordingly maintain the epithet of Taubert. Further information concerning this procedure may be found under *D. gemmiflora*.

I have chosen Glaziou 6698 (P) as the lectotype because the other two specimens cited by Taubert, Glaziou 4765 and 8251, are specimens of *D. martii*.

39. DAPHNOPSIS RACEMOSA Griseb. Symb. Fl. Arg. 134. 1879.

Daphnopsis leguizamoni Griseb. ex Gilg, in Engl. & Prantl Pflanzenf. 3^{6a}:236. 1894, as syn.

Daphnopsis racemosa var. *leptostachys* Chod. & Hassl. in Bull. Herb. Boiss. ser. II 3:811. 1903. [T.: Hassler 5040 (♂ ♀)!]

Daphnopsis longiracemosa Gilg, ex Domke, in Notizbl. 12:728. 1935. [T.: Ule 9077 (♂ ♀)!]

Shrubs or small trees, 1–3 (–8) m. tall, the young branches glabrous. Leaf blades oblanceolate to obovate, 1–18 cm. long, 1–7 cm. broad, obtuse to acute or rarely acuminate at the apex, subauriculate to auriculate at the base, thin-coriaceous, glabrous above and below, the costa plane above, emersed below, the

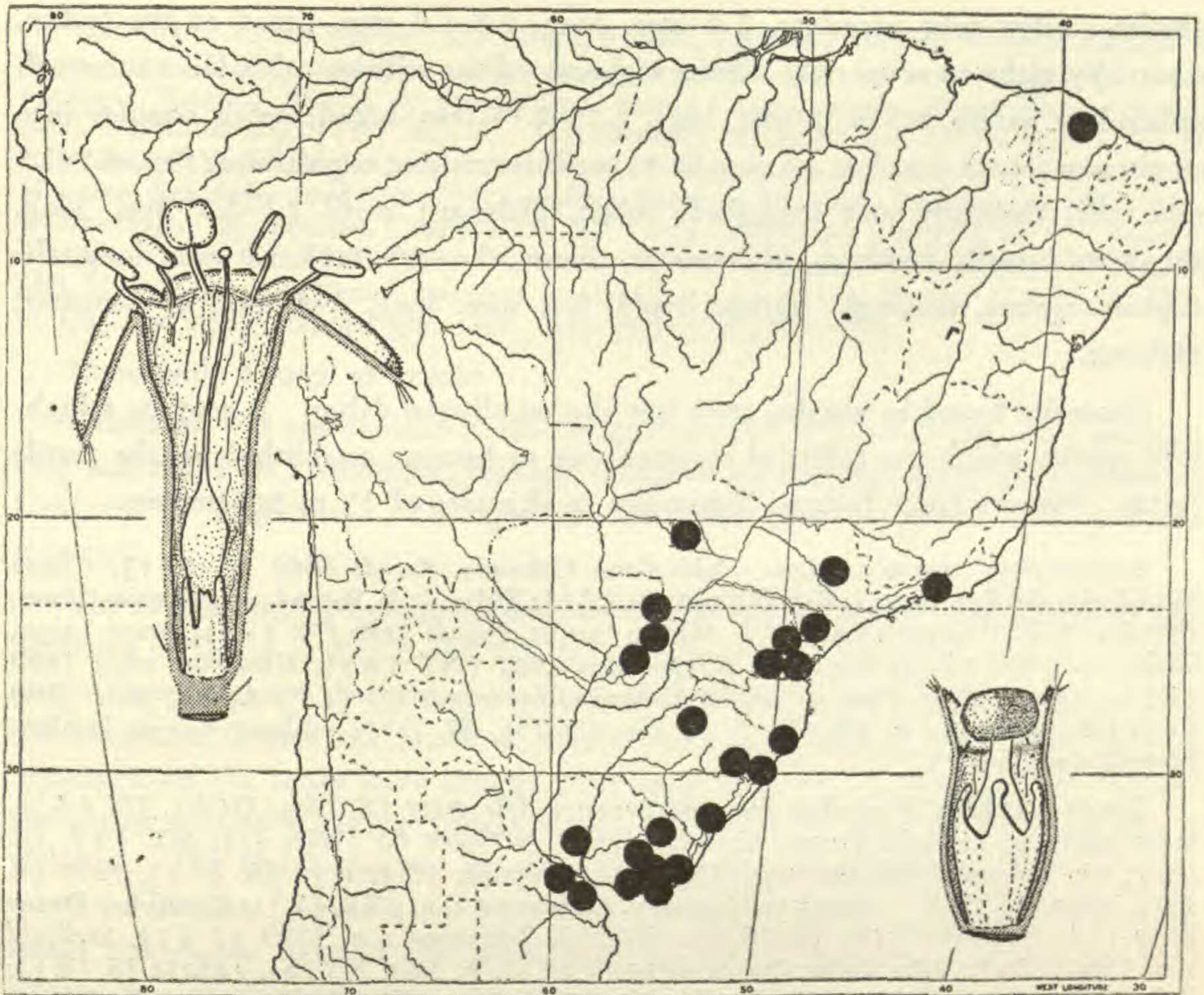


Fig. 44. *Daphnopsis racemosa*

primary lateral veins prominulous above and below, arcuate-ascending; petiole 1–4 mm. long. Inflorescences borne from the young leafy or older defoliated nodes, lax racemiform, essentially glabrous. Staminate inflorescence with the primary peduncle 3–31 mm. long, the rhachis 1–17 mm. long, the secondary peduncles 1–4 mm. long. Staminate flowers: 4–17 per inflorescence; pedicel 0.25–1.5 mm. long; calyx tube tubular, obconic or somewhat campanulate, 3.5–5.5 mm. long, 1.5–2.0 mm. broad at the orifice, essentially glabrous to sparsely villous without, villous within; calyx lobes subequal, generally puberulent within, 1.0–1.5 mm. long, 0.75–1.5 mm. broad; petals connate into an obscure faucal annulus; anti-sepalous stamens inserted just above the orifice, exserted, the alternisepalous inserted just below the orifice, exserted or subexserted, the anthers orbicular, at most 0.5 mm. long and broad, sessile or on filaments about 0.25 mm. long; disc cupuliform, free, to 2 mm. tall, generally irregular and deeply lobed, glabrous, often orange with yellow lobe apices; pistillode fusiform, borne on a slender gynophore, 3.5–6.5 mm. long, glabrous or villous. Pistillate inflorescence with the primary peduncle 3–28 mm. long, the rhachis 1–60 mm. long, the secondary peduncles 1–4 mm. long. Pistillate flowers: (1–)3–19 per inflorescence; pedicel essentially

obsolete; calyx tube urceolate, 2–3 mm. long, 0.5–1.0 mm. broad at the orifice, essentially glabrous or sparsely villous without, villous within; calyx lobes subequal, puberulent within, 0.5–0.75 mm. long, 0.25–0.75 mm. broad; petals connate into an obscure faucal annulus; staminodia 8, papilliform; disc cupuliform, free, 0.5–1.5 mm. tall, shallowly and irregularly lobed, glabrous; pistil 2.0–3.5 mm. long, the ovary broadly fusiform, glabrous or villous, the style 0.25–1.0 mm. long, the stigma capitate, exserted. Drupe ovoid, 5–6 mm. long, 3–4 mm. in diameter, glabrous.

Generally found in wooded areas but also on alluvial deltas. It may be a highland species which has followed watercourses to become established on the fertile deltas. Flowers from June to November at altitudes of 15 to 900 meters.

ARGENTINA: BUENOS AIRES: Delta-Cruz Colorado, *Parodi 8689* [A (♂)]; Chana Mini-Delta del Río Paraná, *Parodi 8152* [A (♂)]; Delta de la Paraná, near Recreo Naon, *Eyerdam & Beetle 23259* [A (♀)]; Martín García, *Parodi 5289* [W (♀)]; Brazo Largo, *Scala s. n.* [NY (♀)]; Campana, *Krapovickas 2603* [NY (♂)], *Hunziker 1653* [MO (♀)]. ENTRE RÍOS: Concepción del Uruguay, *Lorentz 1653* [(♂) A, B], *5621* [MO (♂), US (♂ ♀)], *s. n.* [B (?), F (♂ ♀), US (?), W (?)]; without precise locality, *Lorentz s. n.* [K (♀)].

BRASIL: CEARÁ: Pico alto, Serra de Baturité, *Ule 9077* [K (♀), U (♂), US (♂)]. MATO GROSSO: Lageado, Campo Grande, *Archer & Gebrt 62* [INA (?), NY (♀), US (?)]; Rio Arinos, *Kuhlmann 1068* [R (♀)], *1069* [R (?)], *1070* [R (♀)], *1071* [R (?)], *1072* [R (?)]. PARANÁ: Canguiry, *Capanema s. n.* [RB (♀)]; Curityba, *Dusén 8794* [(♂) S, US], *17173* [S (♂ ♀), W (♂)], *Tessmann s. n.* [MO (♂ ♀)], *Stellfeld s. n.* [MO (♂)]; Villa Velha, *Dusén 8055* [(♀) A, F, MO, NY, S], *14823a* [S (♀)]; Balsa Nova, *Dusén 8492* [(♂) F, GH, M, MICH, MO, NY, S]; Piraquara, *Dusén s. n.* [S (s)]; Guarapuava, *Dusén s. n.* [S (?)]; Rio Igassú, *Hatschbach 1436* [S (♂)]; without precise locality, *Sello 4550* [P (♂)], *4643* [P (?)]. RIO DE JANEIRO: Ilha de Cahô Frio, *Ule s. n.* [R (♂)]; D. Federal, Mesa do Imperador, *Kuhlmann 48139* [MO (♂)]; without precise locality, *Saint Hilaire 194* [P (♀)]. RIO GRANDE DO SUL: Morro do Gloria, *Rambo 29213* [MO (♀)]; Esteio, *Rambo 41642* [MO (?)]; Cristal, prope P. Alegre, *Rambo 42805* [(♂) IAN, MO]; Cai, *Rambo 42572* [(♂) MO, US, W]; Montenegro, *Heuz 32636* [F (♀)]; Canoas, *Rambo 41766* [(?) MO, W]; Morro da Palicia, P. Alegre, *Rambo 43340* [W (♂)]; around Gravataí, *Rambo 42750* [W (♂)]; Serra dos Taypes, *Schwacke 2666* [RB (?)]; S. Leopoldo, *Beetle 1965* [NY (♂)], *Eugenio 213* [NY (♂ ♀)], *Leite 1636* [U (♀)], *Rambo 42621* [IAN (?)], *44060* [IAN (♀)]; Pelotas, *Malme 165* [S (♀)]; Quinta, *Malme s. n.* [S (♀)]; Rio Grande, *Malme 140* [S (♀)]; Taimbesinko, *Rambo 52175* [S (♂)]; Fazenda do Arroio prope Osorio, *Rambo 55897* [MO (♀)], *61160* [MO (♂)]; Osorio, *Rambo 48775* [IAN (♂)], *48900* [MO (♀)]; Morretes, ad flumen rio dos Sinos inferius, *Rambo 42826* [W (♀)]; Palmeira, *Bornmüller 730* [A (♂)]; Montevideo to P. Alegre, *Sello 866* [(♀) B, US]; without precise locality, *Vianna 148* [MO (♂)], *Netto s. n.* [R (♂)], *Ibering 10* [R (♂)], *d'Araujo 46* [R (♀)]. SANTA CATARINA: Sombria, *Reitz 1169* [(♂) S, W], *1754* [NY (♀), US (♂ ♀)]; *s. n.* [R (♂)]; Tubarão, *Ule 1295* [(♂) P, R]; without precise locality, *Tweedie s. n.* [K (♂ ♀)]. SÃO PAULO: Jaguarahyva, *Dusén 10039* [S (♂)], *13091* [S (♀), US (?)], *15114* [(♀) S, W], *17105* [(♂) S, US W]; Serra do Bocaina, *Glaziou 19814* [P (?)]; without precise locality, *Gaudichaud 98* [P (♀)]. WITHOUT PRECISE LOCALITY: *Sello s. n.* [B (?), US (♀)], *Gaudichaud 19* [P (♀)].

PARAGUAY: CAAGUAZÚ: vicinity of Caaguazú, *Hassler 9402* [NY (♂), P (♂ ♀), W (♂)]; vicinity of the river Yhú, *Hassler 9659* [(♀) NY, P, W]; Iter to "Yerbales", Sierra de Maracajú, *Hassler 5040* [(♀) MO, NY, P, S, W]. GUAIRÁ: Villarrica, *Jørgensen 3978* [(♂) A, F, NY, S]. WITHOUT PRECISE LOCALITY: Colonia Gonzales, *Lindman s. n.* [S (♂)].

URUGUAY: CERRO LARGO: Río Negro, Palleros, *Gallinal*, *Aragone*, *Bergalli*, *Campal* & *Rosengurtt* PE-4633 1/2 [U (♂)]; Arroyo Lapallar (?), *Schroeder* 15443 [S (?)]. FLORIDA: Estancia Rincón de Santa Elena, Picada Castro, Arroyo Mansavillagra, *Rosengurtt* & *Gallinal* 5897 [(♂) MO, S]. MALDONADO: Sierra Animas, *Herter* 5050 [(♀) A, F, M, MO, NY, RB, U, US]; Abra Perdomo, *Herter* 5279 [(♀) M, NY]. MINAS: Estia Montano, *Schroeder* 19685 [S (?)]; Lavalleja, Cerro de Arequita, *Legrand* 1135 [F (♂)]. MONTEVIDEO: Montevideo, *Courbon* s. n. [P (♀)], *Kuhlmann* s. n. [RB (♀)]. ROCHA: Castillos, *Herter* 6211 [US (?)]. TREINTA Y TRES: Tacuari, *Herter* 94009 [(♀) A, F, MO, U]; Carajá del Olimer, 2 Leguas de Sta Clara, *Rosengurtt* B-4874 [(♂ ♀) A, MO, U, US]. WITHOUT PRECISE LOCALITY: *Sello* 4550 [(♂) NY, US].

Commonly known as *imbira*.

Grisebach was not explicit in the designation of a type specimen. His description was based on a specimen, possibly collected by Lorentz, from Concepción de Uruguay in Argentina. The specimen included both staminate and pistillate material.

The rather large geographic disjunction that exists between the plants of the province of Ceará in Brasil and the rest of the range is accompanied by a single minor morphological discrepancy in both the staminate and pistillate flowers. In the staminate flowers the plants of Ceará have sessile anthers while those of the remainder of the range have shortly filamented anthers. In the pistillate flowers the plants of Ceará have a villous ovary; the ovary in the rest of the plants is glabrous. The Ceará segment has been delimited as a separate species, *D. longiracemosa* Domke. There is some question whether it merits subspecific or varietal status but in the light of the uncertainty of the range I feel the group is best treated as a single species.

There appears to be some basis for the named variety, *leptostachys* Hassl., because of the elongate inflorescence. The inflorescence of these specimens has an elongate rhachis which has been formed by elongation between the flowers. In all other respects the specimens are similar to the rest of the species, so I have not maintained this variety.

This is the most widespread species of the subgenus NEIVIRA. In addition to those epithets included in the synonymy several additional manuscript names can be found.

The location of the Sello specimens was determined from the list of Urban in Engl. Bot. Jahrb. 17:196. 1893.

40. DAPHNOPSIS CORIACEA Taub. in Engl. Bot. Jahrb. 12: Beibl. 27:7. 1890.
[T.: *Glazion* 8911 (♂)!]

Leaf blades obovate to oblanceolate, 8–16 cm. long, 2–8 cm. broad, obtuse to subacute at the apex, cuneate at the base, thick-coriaceous, glabrous above and below, the costa plane to immersed above, emersed below, the primary lateral veins prominulous above and below, arcuate-ascending; petiole 15–28 mm. long. Inflorescences borne from the young leafy nodes, lax racemiform, hirtellous and glabrescent. Staminate inflorescence with the primary peduncle 15–20 mm. the rhachis 5–10 mm. long, the secondary peduncles 1–3 mm. long. Staminate

flowers: 15–25 per inflorescence; pedicel 0.5–1.5 mm. long; calyx tube broadly campanulate, about 4 mm. long, 4 mm. broad at the orifice, minutely and sparsely puberulent without, villous within; calyx lobes subequal, puberulent within, 2.0–2.5 mm. long, 1.5–1.75 mm. broad; petals connate into an obscure faucal annulus; antisepalous stamens inserted about an anther's length above the orifice, exserted, the alternisepalous inserted at the orifice, exserted, the filaments 0.5–1.0 mm. long, the anthers orbicular, about 0.75 mm. long, 1 mm. broad; disc cupuliform, free, broadly lobed, to 2 mm. tall; pistillode lageniform, about 5 mm. long, densely villous. Pistillate inflorescence with the primary peduncle 14–30 mm. long, the rhachis 7–25 mm. long, the secondary peduncles 1–3 mm. long. Pistillate flowers: 8–25 per inflorescence; pedicel about 1.5 mm. long; calyx tube urceolate, 2.5–3.0 mm. long, about 1.5 mm. broad at the orifice, minutely and sparsely puberulent without, villous within; calyx lobes as in staminate flowers; staminodia 8, papilli-form; disc cupuliform, free, deeply lobed, glabrous; pistil about 3.5 mm. long, the ovary ovoid, villous at least towards the base, the style 1.0–1.5 mm. long, the stigma capitate, exserted. Drupe not seen.

Flowers in May and June.



Fig. 45. *Daphnopsis coriacea*

BRASIL: RIO DE JANEIRO: summit of Tingua, *Glaziou 8911* [C (♂), F (fragment, s), NY (?), P (?)]; Alto Macabé, *Glaziou 18469* [C (♂), F (?), P (♂), US (♂)]; Organ Mts., *Glaziou 3639* [C (♀), F (♂), P (♀), US (?)]; Morro de Bandeira, *Glaziou 14226* [C (♀), P (♂ ♀)]; Parque Nac. de Serra dos Orgãos, *Dionisio & Otarrio 339* [RB (♂)], *Brade 10924* [R (♂)]; Petropolis, *Glaziou s. n.* [R (♂)].

Taubert based this species on *Glaziou 8911* and *14226*. The specimens which he saw apparently lacked locality data, but this is now supplied from duplicates which he had not seen.

The staminate flowers sometimes contain an extra stamen, in which case the normal position of the stamens is somewhat modified.

41. *DAPHNOPSIS SELLOWIANA* Taub. in Engl. Bot. Jahrb. 12: Beibl. 27:7. 1890.
[T.: *Glaziou 15383* (♂)!]

Shrubs or trees (?), the young branches tomentose and glabrescent. Leaf blades narrowly elliptic to obovate or oblanceolate, 4.5–14.0 cm. long, 1.5–4.0 cm. broad, acute to obtuse at the apex, cuneate at the base, coriaceous, glabrous above, sericeous or tomentose to glabrescent below, the costa emersed above, immersed below, the primary lateral veins obscure, arcuate-ascending, the margins revolute; petiole 2–4 mm. long. Inflorescences borne from the young leafy or defoliated nodes, umbelliform, hispidulous, the primary peduncle 1–5 mm. long, the rhachis about 0.5 mm. long, the secondary peduncles to 2 mm. long. Staminate flowers: 5–15 per inflorescence; pedicel 0.5–1.0 mm. long; calyx tube obconic, 3–4 mm. long, 1–2 mm. broad at the orifice, hispidulous without, villous within; calyx

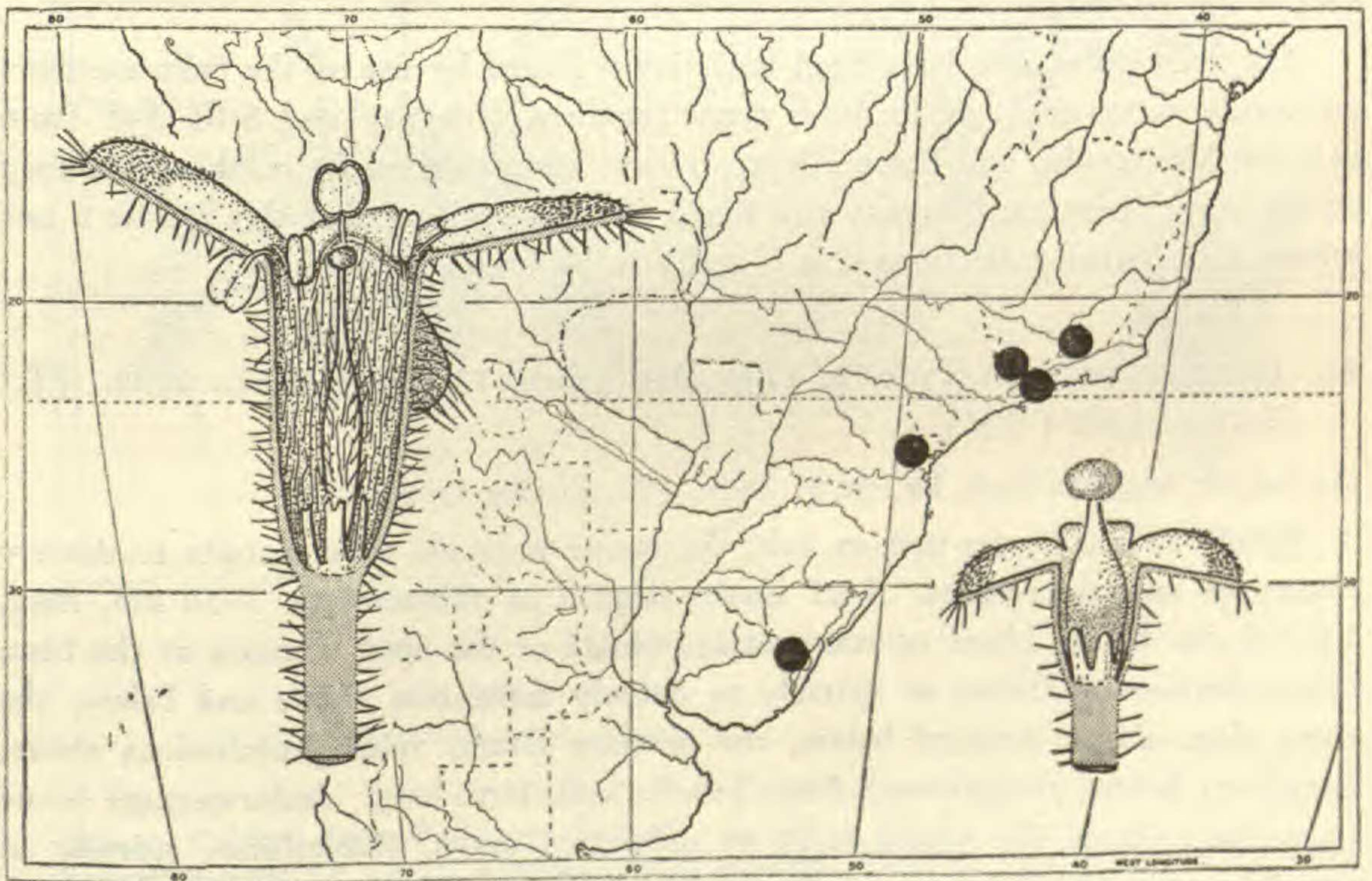


Fig. 46. *Daphnopsis sellowiana*

lobes unequal, puberulent within, the outer 2 mm. long, 1.5 mm. broad, the inner to 1.5 mm. long, 1.0–1.5 mm. broad; petals connate into an obscure faucal annulus; antisepalous stamens inserted from just above the orifice to several anthers' lengths above the orifice, the alternisepalous inserted at the orifice, exserted, the filaments about 0.25 mm. long, the anthers orbicular, 0.25–0.5 mm. long and broad; disc cupuliform, free, deeply or shallowly lobed, to 1.5 mm. tall, glabrous; pistillode fusiform, borne on a gynophore, 3.0–4.5 mm. long, villous. Pistillate flowers: 4–10 per inflorescence; pedicel 0.5–0.75 mm. long; calyx tube campanulate, about 1 mm. long, 0.5–0.75 mm. broad at the orifice, hispidulous without, glabrous within; calyx lobes subequal, puberulent within, 0.75–1.0 mm. long and broad; petals connate into an obscure faucal annulus; staminodia 0; disc cupuliform, free, lobed almost to the base, to 0.5 mm. tall, glabrous; pistil 1.25–2.0 mm. long, the ovary ovoid, glabrous or villous at the base, the style to 0.5 mm. long, the stigma capitate, exserted. Drupe ovoid, 4–5 mm. long, 3–4 mm. in diameter, glabrous.

Flowers in June and July.

BRASIL: MINAS GERAIS: Barbacena, *Glaziou 15383* [(♂) C, F, MA, P, US]; Caldas, *Glaziou s. n.* [P (♂)]; without precise locality, *Widgren s. n.* [R (♀)]. PARANÁ: Serinha, *Dusén 6858* [(♀) F, M, MICH, MO, S], 7327 [(♀) NY, S. US], *Hatschbach 2281* [US (♂)]; without precise locality, *Sello 4643* [B (♂), C (♀), K (♂♀), NY (♀), P (♂), US (♀)]. RIO GRANDE DO SUL: without precise locality, *Sello 858* [(♂) P, US]. SÃO PAULO: Bananal, Sertão do Rio Vermelho, *Brade 15899* [MO (♀)]. WITHOUT PRECISE LOCALITY: *Sello s. n.* [US (♀)].

URUGUAY: WITHOUT PRECISE LOCALITY: *Sello 86* [B (♂)].

In the original description Taubert cited three specimens, *Sello 858*, *4643* and *Glaziou 15383*, all without location. I have chosen the *Glaziou 15383* (P) specimen as the lectotype.

The Sello collections have been tentatively placed by use of the Sello numbers previously mentioned. *Sello 86* is from southern Uruguay and *Sello 858* from between Montevideo and Porto Alegre; I have compromised by marking the map on the border between Uruguay and Brasil. It is surprising that this species is not known from other collections if it is really to be found in this area.

42. *DAPHNOPSIS BETA* Taub. in Engl. Bot. Jahrb. 12: Beibl. 27:5. 1890. [T.: *Glaziou 11481* (♂)!]

Daphnopsis longifolia Taub. loc. cit. 9. 1890. [T.: *Glaziou 8252* (♀)!]

Shrubs or small trees to 5 m. tall, the young branches very sparsely to densely tomentose and glabrescent. Leaf blades elliptic to oblanceolate, 3–30 cm. long, 1.0–5.5 cm. broad, blunt or acute to acuminate at the apex, cuneate at the base, thin-coriaceous, glabrous or sparsely to densely tomentose above and below, the costa plane above, emersed below, the primary lateral veins prominulous above, prominent below, arcuate-ascending; petiole 3–20 mm. long. Inflorescences borne from the axils of the young leafy or defoliated nodes, racemiform, sparsely to densely tomentose. Staminate inflorescence with the primary peduncle 1–23 mm. long, the rhachis 1–8 mm. long, the secondary peduncles 1–3 mm. long. Staminate

flowers: 8–20 per inflorescence; pedicel 0.5–1.5 mm. long; calyx tube narrowly to broadly campanulate, 1.5–3.0 mm. long, 1.5–4.0 mm. broad at the orifice, tomentose without, densely villous within; calyx lobes subequal, indefinitely papillate or minutely tomentose within, 1.5–2.5 mm. long, 1.5–2.0 mm. broad; petals absent; antisepalous stamens inserted about 2 anthers' lengths above the orifice, exerted, the alternisepalous inserted at the orifice, exerted, the filaments 0.25–1.5 mm. long, the anthers orbicular, about 0.5 mm. long and broad; disc cupuliform, free, deeply or shallowly lobed, glabrous; pistillode ovoid, 2.0–3.5 mm. long, densely villous. Pistillate inflorescence with the primary peduncle 0.25–27.0 mm. long, the rhachis 0.25–1.0 mm. long, the secondary peduncles 0.25–1.0 mm. long. Pistillate flowers: 5–15 per inflorescence; pedicel 0.5 mm. long; calyx tube campanulate, 1.0–1.75 mm. long, about 1 mm. broad at the orifice, tomentose without, glabrous or sparsely villous within; calyx lobes subequal, indefinitely papillate or minutely tomentose within, 0.75–1.25 mm. long, 0.75–1.0 mm. broad; petals absent; staminodia absent; disc cupuliform, free, irregularly short-lobed, glabrous; pistil 1.5–2.5 mm. long, the ovary obovoid, densely villous, the style about 0.5 mm. long, the stigma capitate, exerted. Drupe ovoid, 6–7 mm. long, 3–4 mm. in diameter, tomentose and glabrescent.

A small woodland species capable of flowering in any season.

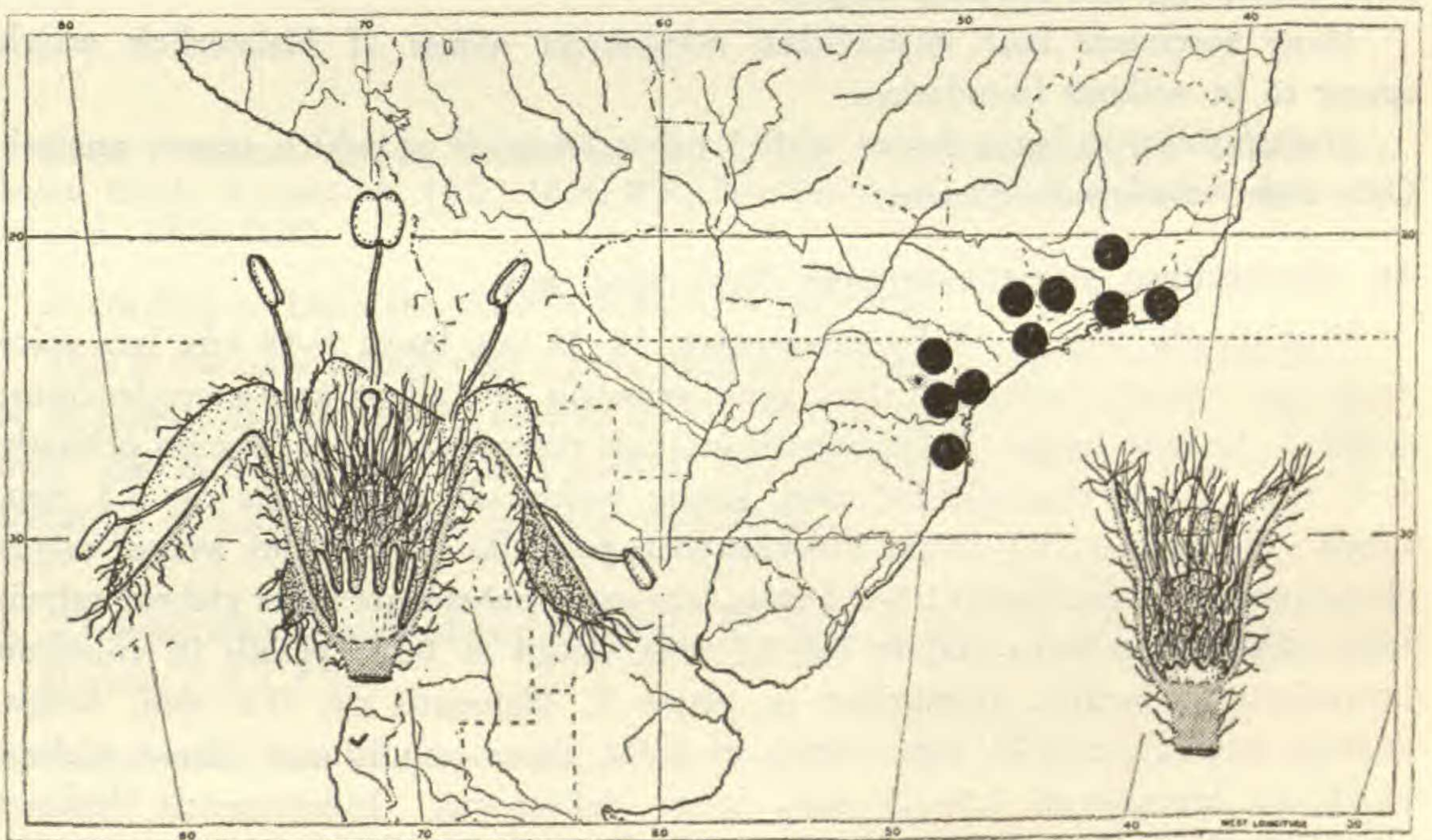


Fig. 47. *Daphnopsis beta*

BRASIL: GOIÁS: Bord du Rio Bananal au Chico Lobo, *Glaziou 22019* [P (♀)]. MINAS GERAIS: Caldas, *Regnell II 127* [K (♂), R (♂), US (♂♀)]; Serro de Ouro Preto, *Schwacke 9465* [P (♂)]; without precise locality, *Widgren 1025* [NY (♂)]. PARANÁ: Villa Velha, *Dusén 14823* [S (♂)]; Ypiranga, *Dusén 17286* [(?) S, US]; Volta Grande, *Dusén 11978* [S (s)]; Fortaleza, *Dusén 1279a* [S (?), W (♂)]; Guaratuba, *Dusén 13638*

[(s) S, US]; Cerro Azul, *Hatschbach* 730 [(♂) MO, S]; S. José dos Pinhaes, Estrada Curitiba-Joinville, entre Rios S. Joaõzinho e Iteraré, *Hatschbach* 1252 [(♂) S, US]; S. José dos Pinhaes, Estr. Curitiba-Joinville, Alto da Serra, *Hatschbach* 1449 [S (♂)]; Piraquara, *Dusén* 3248a [S (s)], *Hatschbach* 1508 [S (♂)]; Ponta Grossa, *Dusén* s. n. [S (s)]; Marumby, *Dusén* 14061 [(♂) S, US]; Carvalho, *Dusén* 13010 [NY (?), S (♀), US (s)]; without precise locality, *Jousson* 788a [S (s)], *Sello* 4644 [(♂) P, US]. RIO DE JANEIRO: Nova Friburgo, *Glaziou* 8252 [C (?), F (?), P (♀), RB (?), US(s)], 12141 [F (fragment, s), P (♀)], 19813 [C (♂), F (♂♀), P (♀), US (♂)]; Itatiaia, Serra Negra, *Porto* 2872 [RB (♂)]; Fazenda Imperial de Sta. Cruz, *Glaziou* 11481 [(♂) C, F, P, US, W]; Serra do Picú, *Lanstyack* 147 [MO (?)]. ST. CATARINA: S. Bento, *Schwacke* s. n. [R (s)]; Matas Pedro, Brusque, *Klein* 142 [US (♂)]; Biguassu, *Rambo* 50360 [(♀) MO, S]; propre Joinville, *Schwacke* 1334 [RB (♀)], 3278 [MO (?)]. SÃO PAULO: São Bernardo, *Wettstein & Schiffner* s. n. [W (♂)]; Santos, *Kuhlmann* s. n. [RB (♀)]; Mogi das Cruzes, *Hashimoto* 50 [RB (♀)]; Bocaina, *Brade* 2100 [MO (?)]; without precise locality, *Gaudichaud* 94 [P (♀)]. WITHOUT PRECISE LOCALITY: *Burchell* 4700 [K (♂♀), P (♀)].

Known as *beta*, *imbira* and *embirucu*.

Daphnopsis beta and *D. longifolia* represent different segments of a rather variable species. They were both described in the same work in 1890, so neither has priority over the other. I have chosen to maintain the *beta* epithet because of the inadequacies of the other. At least three other species of the genus have longer leaves. The description of *D. beta* is based upon *Glaziou* 11481 and *Sello* 4644. I have chosen *Glaziou* 11481 (P) as the lectotype.

The species appears variable in leaf shape, size and pubescence; flower size and pubescence; disc and filament length.

Many specimens bear unpublished manuscript names of Heimerlich which appear to be without foundation.

Hatschbach 730 has a flower with 5 calyx lobes, all of which appear normal. Only eight stamens are present.

43. *DAPHNOPSIS sanctae-teresae* Nevl. spec. nov.

Frutices nisi arbores. Folia oblanceolata 12–38 cm. longa 3–10 cm. lata apice acuta basi cuneata coriacea glabra, venis primariis lateralibus arco-ascendentibus; petiolo 3–10 mm. longo. Inflorescentia mascula racemiformis; pedunculo primario 4–11 mm. longo; rhachide 2–5 mm. longo; pedunculis secundariis ca. 0.5 mm. longis. Flores masculi 4–10 per inflorescentia; pedicello 1.5–2.5 mm. longo; calyce obconico ca. 4.5 mm. longo 1.5–2.0 mm. lato extus pubescente intus glabro; calycis lobis subequalibus intus glabris 1.0–1.5 mm. longis et latis; petalis in anulum brevissimum connatis; staminibus in planis 2, filamentis ca. 0.5 mm. longis, antheris orbicularis 0.25 mm. longis et latis; disco cupuliformi libero glabro; pistillodio lageniformi 2.5–3.5 mm. longo pubescente. Inflorescentia feminea racemiformis; pedunculo primario 8–14 mm. longo; rhachide 10–18 mm. longo; pedunculis secundariis ca. 0.25 mm. longis. Flores feminei 8–15 per inflorescentia; pedicello ca. 0.5 mm. longo; calyce campanulato 1.25 mm. longo 1 mm. lato extus pubescente intus glabro; calycis lobis subequalibus intus glabris 1.25 mm. longis 1 mm. latis; petalis 0; staminodiis 0; disco cupuliformi libero glabro; pistillo ca. 2.75 mm. longo ovario ovato glabro stigmate capitato exserto. Fructus non vidi. HOLOTYPUS: *Ducke & Lima III* (IPA).

Flowers in May.

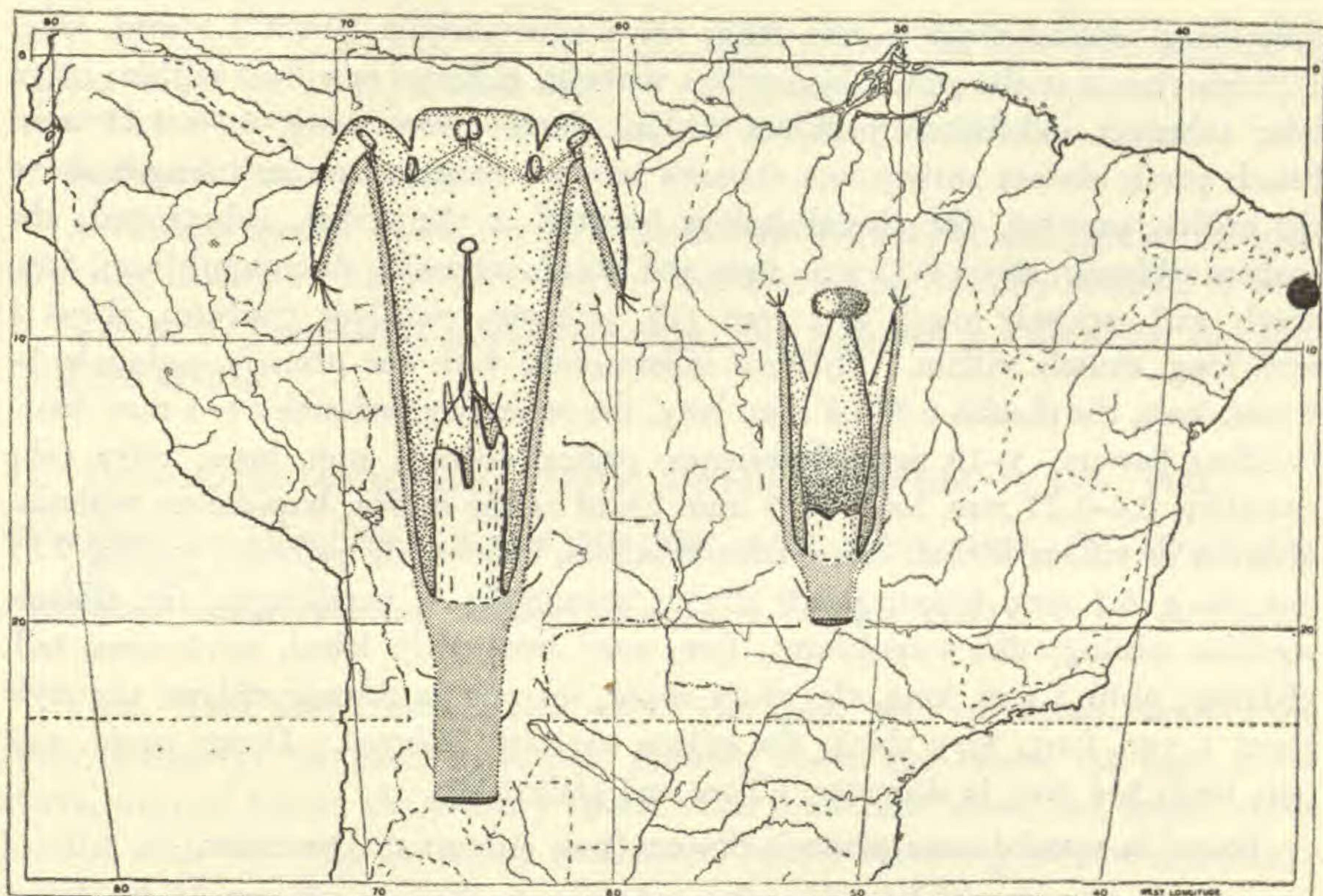


Fig. 48. *Daphnopsis sanctae-teresae*

BRASIL: BAHIA: Ilhéus, Velloso 941 [R (♀)]. PERNAMBUCO: Pe. Goiana, Sta. Tereza, Ducke & Lima III [(♀) IAN, IPA, R]; Recife, Mata de Dois Irmãos, Lima 49-214 [(♂) IAN, IPA].

According to Lima the plant is known as *gauxama*.

This is the only species that I have observed to have petals in one condition in the staminate flower and in another in the pistillate flower. Since the pistillate flower also lacks staminodia it is possible that something has interfered with the formation of both the petals and the staminodia.

44. DAPHNOPSIS MARTII Meissn. in Mart. Fl. Bras. 5¹:66, t. 28. f. 2. 1895. [T.: Martius 119 (♂)!]

Daphnopsis martii var. *congregata* Domke, in Notizbl. 12:730. 1935. [T.: Brade 14663 (♀)!]

Shrubs to 2 m. tall. Leaf blades elliptic to oblanceolate or obovate, 10–33 cm. long, 4–12 cm. broad, acute to acuminate or subcaudate-acuminate at the apex, cuneate at the base, thin-subcoriaceous, sericeous (?) and glabrescent above and below, the costa plane above, emersed below, the primary lateral veins prominent above and below, arcuate-ascending; petiole 5–10 mm. long. Inflorescences borne from the young leafy or defoliated nodes, dense racemiform, hispidulous. Staminate inflorescence with the primary peduncle 4–10 mm. long, the rhachis 0.5–2.0 mm. long, the secondary peduncles 1–4 mm. long. Staminate flowers: 7–15 per in-

florescence; pedicel about 1 mm. long; calyx tube obconic, about 1.5 mm. long, 1.25 mm. broad at the orifice, hispidulous without, glabrous or villous within; calyx lobes subequal, indefinitely papillate within, about 1 mm. long, 0.75–1.25 mm. broad; petals absent; antisepalous stamens inserted about an anther's length above the orifice, exserted, the alternisepalous inserted at the orifice, subexserted, the anthers orbicular, about 0.75 mm. long and broad, subsessile; disc cupuliform, free, deeply and narrowly lobed, to 1 mm. tall, glabrous; pistillode fusiform, about 2 mm. long, densely villous. Pistillate inflorescence with the primary peduncle 1–8 mm. long, the rhachis 0.5–5.0 mm. long, the secondary peduncles 1–3 mm. long. Pistillate flowers: 5–10 per inflorescence; pedicel about 1 mm. long; calyx tube urceolate, 2.0–2.25 mm. long, 0.75 mm. broad at the orifice, hispidulous without, glabrous or villous within; calyx lobes subequal, indefinitely papillate within, 0.75 mm. long, 0.5 mm. broad; petals absent; staminodia 4, papilliform, the alternisepalous missing; disc cupuliform, free, very irregularly lobed, to 1 mm. tall, glabrous; pistil 3 mm. long, the ovary ovoid, sparsely to densely villous, the style about 1 mm. long, very thick, the stigma capitate, exserted. Drupe ovoid, 6–7 mm. long, 3–4 mm. in diameter, villous and glabrescent.

Found in wooded areas where it flowers from August to December.

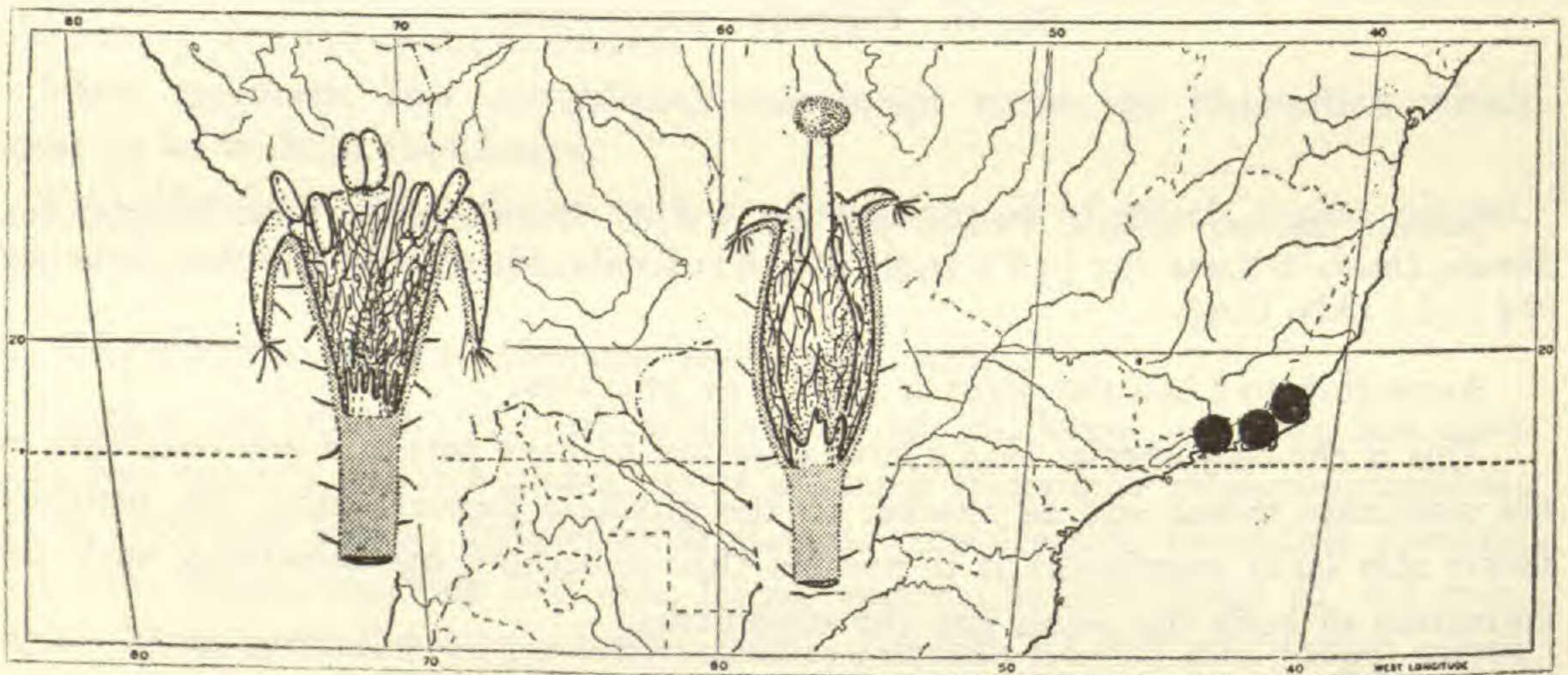


Fig. 49. *Daphnopsis martii*

BRASIL: RIO DE JANEIRO: Corcovado, *Martius* 119 [M (♂)], *Schwacke* 7302 [RB (♀)], 8989 [RB (♂)], *Ducke* & *Kuhlmann* 6150 [RB (♀)], 16374 [RB (♂)], *Gaudichaud* 15 [P (♀)], *Glaziou* 2633 [P (♂)], 18466 [(♂) C, P]; sylvis ad Rio de Janeiro, *Martius* 119^{bis} [M (s)]; Rio, *Lützelburg* 263 [M (?)]; Chamin du Macao, *Glaziou* 9572 [C (♂), P (?), US (?)]; Serra du Estrella, *Brade* 10523 [R (♂)], *Glaziou* 8251 [C (♀), F (♂), P (♂)], *Ducke* & *Kuhlmann* 19159 [RB (♀)]; Tijuca, *Glaziou* 4765 [(♂) C, P, US], *Brade* 10522 [R (♂)], *Ule* 3277 [R (♂)], *Ducke* 21333 [RB (♀)], *Markgraf* & *Brade* 3086 [RB (♂)]; Serra du Carioca, *Brade* 21784 [RB (♂)], s. n. [R (♂)]; Mattas du Gavea (?), *Constantino* 2276 [RB (♂)]; Serra du Petropolis, *Buarte* 1489 [RB (♂)], *Moura* 1051 [B (♂)]; Serra dos Orgãos, *Pereira* 180 [RB (♀)]; Matos du V. Chinaza, D. Federal, *Occhioni* 181 [RB (?)]; Sta. Magdalena, *Lima* 253 [RB (♂)], 317 [RB (♂)]; Itatiaia, *Brade* 14663 [RB (♀)], 14664 [RB (♀)]; Rio Paquetaes, *Mello* & *Brade* s. n.

[MO (♂)], Markgraf 10005 [RB (♂)]; Serra da Cautareira, Navarro 59 [RB (?)]; Teresopolis, Brade 9221 [R (♂)], Emygdio & Filho 867 [R (♂)], Emygdio & Velloso 36e498 [R (♂)], Sampaio 2497 [R (♂)], Barros 1031 & 1125 [MO (♂ ♀)]; without precise locality, Glaziou 2633 [C (?)], 20472 [C (?)].

Known as *pau de embira*.

A variable species which is poorly understood because of the paucity of good flowering material. Staminate flowers at anthesis are particularly difficult to find.

Martius 119 represents a split collection, part collected at Corcovado and part collected at Rio.

45. *DAPHNOPSIS GEMMIFLORA* (Miers) Domke, in Notizbl. 13:388. 1936.

Coleophora gemmiflora Miers, in Ann. Nat. Hist. ser. II. 6:197. 1851. [T.: Miers f. s. n. (♂) photo!]

Daphnopsis schwackeana var. *itatiaiensis* Domke, in Notizbl. 12:731. 1936. [T.: Brade 13990 (s)!]

Trees. Leaf blades oblanceolate, 40–64 cm. long, 9–14 cm. broad, acute at the apex, cuneate at the base, coriaceous, glabrous above and below, the costa plane above, emersed below, the primary lateral veins prominent above and below, often parallel with the costa for a few millimeters before becoming arcuate-ascending; petiole 10–18 mm. long. Inflorescences from the older defoliated nodes, lax racemiform, glabrous, the primary peduncle 3–16 mm. long, the rhachis 5–20 mm. long, the secondary peduncles 1.0–2.5 mm. long. Staminate flowers: 12–20 per inflorescence; pedicel obsolete; calyx tube narrowly obconic, 3.0–3.5 mm. long, 1.0–1.5

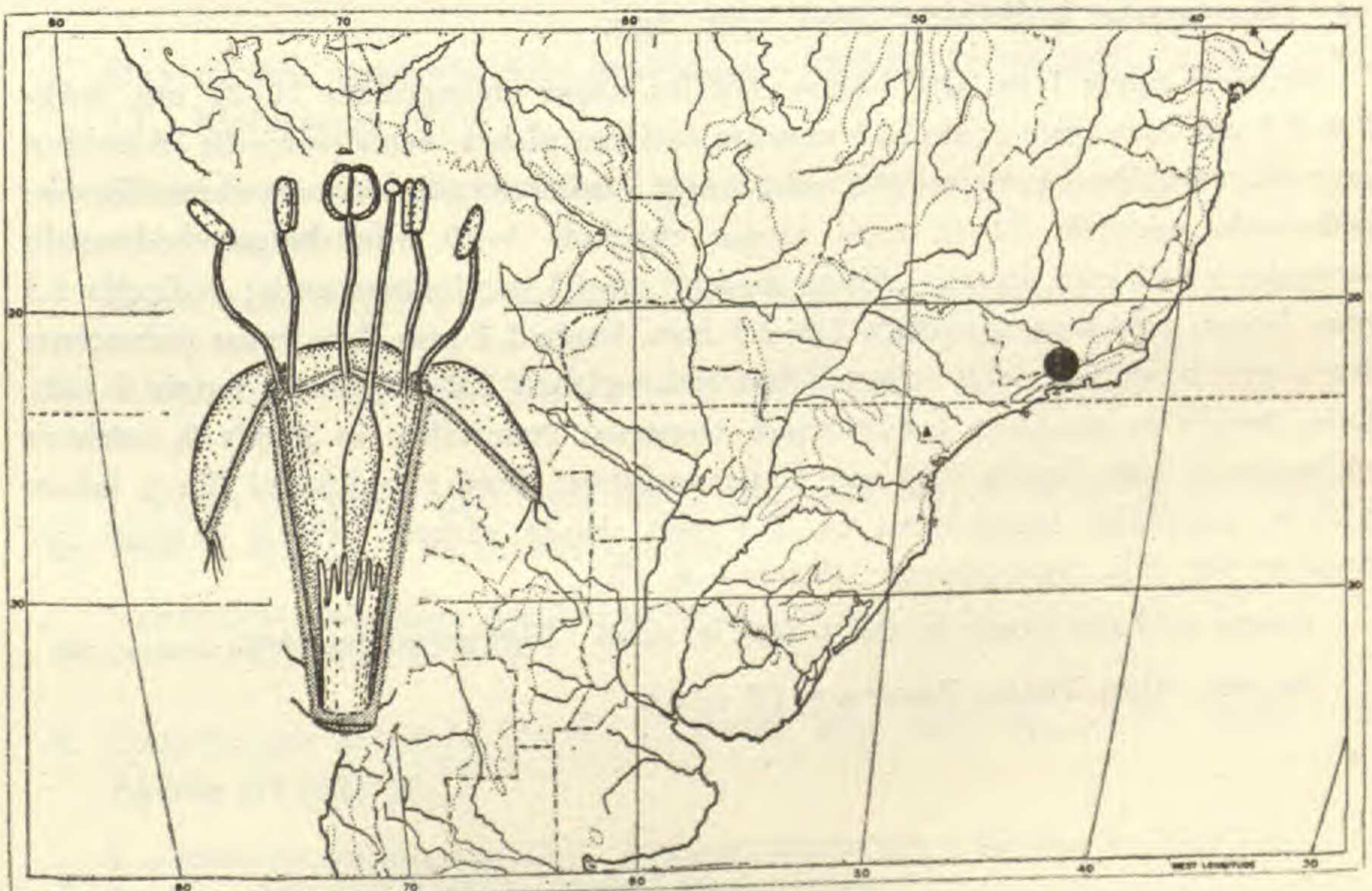


Fig. 50. *Daphnopsis gemmiflora*

mm. broad at the orifice, sparsely puberulent without, glabrous within; calyx lobes subequal, indefinitely papillate within, 1.5–2.0 mm. long, 1.0–1.5 mm. broad; petals connate into an obscure faucal annulus; antisepalous stamens inserted at the orifice, exserted, the alternisepalous inserted just below the orifice, exserted, the filaments about 1.5 mm. long, the anthers orbicular, about 0.5 mm. long and broad; disc cupuliform, free, about 1.5 mm. tall, long-lobed, glabrous; pistillode borne on a gynophore, fusiform, ca. 5.5 mm. long, glabrous. Pistillate flowers and fruit not seen.

Flowers in August and September.

BRASIL: RIO DE JANEIRO: Parque Nac. Itatiaia, Almirante, *Pereira, Egler & Graziela* 76 [RB (♂)]; Itatiaia, *Dusén* 736 [R (♂)], *Brade* 13990 [RB (s)]; Igassú, *Miers* f. s. n. [BM (♂) photo].

This poorly known species appears to be closely related to *D. schwackeana*. There has been considerable difficulty in associating the name *gemmiflora* to the proper specimens. Domke applied it to *D. schwackeana* but the Miers specimen differs from that species in that the inflorescences are borne from the young leafy nodes. Fertile material of Domke's *D. schwackeana* var. *itatiensis* has recently come to light and it is similar to the Miers collection in that it was collected from large trees; the inflorescences are borne from the old defoliated nodes and the staminate flowers appear similar. Admittedly, there are a few discrepancies, i.e. exsertion or inclusion of the pistillode, pubescence of the pistillode and length of the filaments.

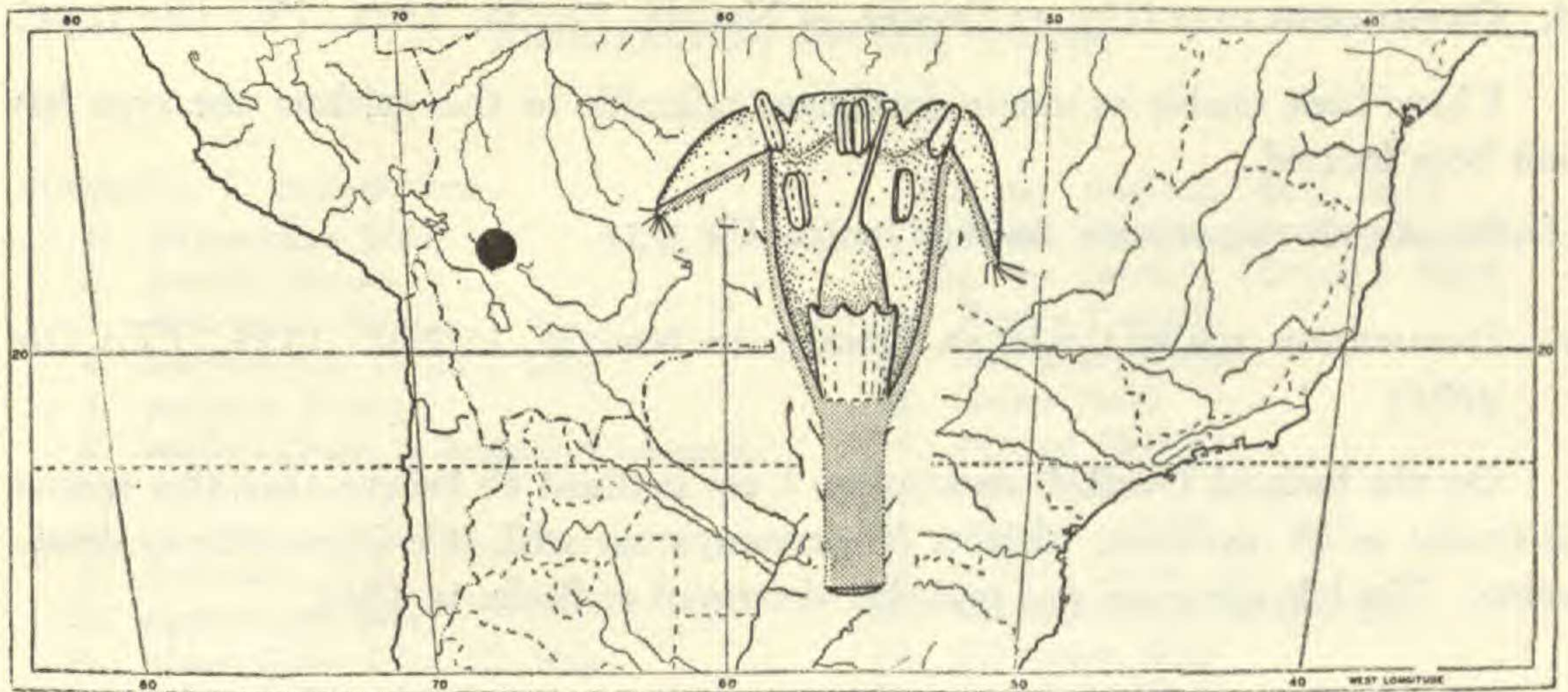
The pistillode bears ovules which may or may not be functional. There is a possibility that this species is functionally bisexual but I cannot be certain.

46. *DAPHNOPSIS boliviana* Nevl. spec. nov.

Frutices usque 1 m. alti. Folio elliptica usque oblanceolata 20–27 cm. longa 7.0–9.5 cm. lata apice acuta basi cuneata coriacea glabra, venis primariis lateralibus arco-ascendentibus; petiolo 8–10 mm. longo. Inflorescentia mascula racemiformis; pedunculo primario 20–45 mm. longo; rhachide 5–20 mm. longo; pedunculis secundariis 1–2 mm. longis. Flores masculi 15–25 per inflorescentis; pedicello 1.5 mm. longo; calyce campanulato 2.0–2.5 mm. longo 1.5 mm. lato extus pubescente intus glabro; calycis lobis subequalibus intus glabris 1.0–1.25 mm. longis 1 mm. latis; petalis in annulum brevissimum connatis; staminibus in planis 2, antheris oblongis 0.5 mm. longis 0.25 mm. latis sessilibus; disco cupuliformi libero lobato glabro; pistillodio lageniformi ca. 2.5 mm. longo glabro. Flores feminei nec fructus non vidi. HOLOTYPUS: *Pearce* s. n. (K).

Found in shady woods in the 4–500 ft. zone. Flowers in January.

BOLIVIA: Moro Yungas, *Pearce* s. n. [K (♂)].

Fig. 51. *Daphnopsis boliviana*

SPECIES OF UNDETERMINED STATUS

1. BOSCA STUPACEA Velloso, Flor. Flumin. 142. 1881; Icon t. 11. 1827.

I agree with previous authors that the description and illustration is representative of a species of *Daphnopsis*. Unfortunately, both the description and the illustration are sufficiently vague so as to confound placement of the epithet on any extant specimen. It could be placed upon any of five or six species of the subgenus NEIVIRA.

2. DAPHNOPSIS CARIBAEA var. PERUVIENSIS Domke, in Notizbl. 12:727. 1935. [T.: Weberbauer 1813]

I have been unable to locate any specimens referable to this variety. The type has not been located.

PERU: TARMA: Janin, La Merced im Chanchamayotal, Weberbauer 1813.

3. DAPHNOPSIS DIRCOIDES Steyerm. in Fieldiana 28:420. 1952. [T.: Steyermark 60136 (s)!]

I cannot be certain that these sterile specimens represent a species of *Daphnopsis*; they do appear to be thymelaeaceous.

VENEZUELA: BOLÍVAR: Sorroropán-tepuí, crest of cerro between east and west end, Steyermark 60136 [(s) F, NY].

4. DAPHNOPSIS EKMANII Domke, in Fedde, Rep. Nov. Sp. 32:85. 1933. [T.: Ekman H15259 (s)!]

I cannot be certain that the collection represents a species of *Daphnopsis* but the leaves are similar to those of *D. belleriana* Urb.

DOMINICAN REPUBLIC: SAMANA: Laguna, Loma Zaramagua, Ekman H5259 [US (s)].

5. *DAPHNOPSIS ULEI* Gilg, ex Domke, in Notizbl. 12:725. 1935. [T.: *Ule* 3754]

I have been unable to obtain specimens referable to this epithet; the type has not been located.

BRASIL: RIO DE JANEIRO: Serra do Itatiaia, *Ule* 3754.

6. *DAPHNOPSIS UMBELLULIGERA* Domke, in Notizbl. 12:730. 1935. [T.: *Ule* 4765]

On the basis of Domke's description I am inclined to believe that this species is similar to *D. racemosa*; whether it is synonymous with it is impossible to determine. The *Ule* specimen was probably destroyed at Berlin in 1942.

7. *DAPHNOPSIS ZAMORENSIS* Domke, in Notizbl. 12:729. 1935. [T.: *Lehmann* 4823]

I have been unable to locate specimens of this species but from Domke's description I am inclined to believe that it is a good species of subgenus *NEIVIRA*.

ECUADOR: East Andes from Loxa to Zamora, 1000–1500 m., F. C. *Lehmann* 4823.

EXCLUDED SPECIES

1. *Daphnopsis ericiflora* Gilg & Markgraf, in Fedde, Rep. Nov. Sp. 19:113. 1925. = *Funifera* sp. acc. to Domke, in Bibliotheca Bot. 27¹¹¹:127. 1934.

Examination of the type material leads me to agree with Domke regarding this species. The type is a staminate specimen of *Funifera*.

2. *Daphnopsis longipedunculata* Gilg, ex Domke, in Notizbl. 12:723. 1935. = *Funifera* sp.

Examination of the type specimen of this species indicates that it properly belongs to the genus *Funifera*. The eccentric style is particularly diagnostic.

3. *Daphnopsis weberbaueri* Domke, in Notizbl. 12:722. 1935. = *Ovidia* sp.

Examination of the type material of this species indicates that it properly belongs to the genus *Ovidia*. The collector, Von Weberbauer, was of the opinion that his specimens were representative of *Ovidia* but Domke disagreed and placed them in *Daphnopsis*. Domke's decision was based on characters of the disc, the amount of phloem fibers in the leaf, the distribution of the respective genera and possibly the sessile anthers. The genus *Daphnopsis* is variable in these characters and there is no reason to believe that *Ovidia* is not also variable. The style is clearly eccentric and this is sufficient to place the specimens in *Ovidia*. It is true that this species lies outside the present range of *Ovidia* but the disjunction may be due to lack of collection.

ENUMERATION OF THE SPECIES

SUBGENUS I. DAPHNOPSIS

1. *hispaniolica* Nevl.
2. *purdiei* Meissn.
3. *caracasana* Meissn.
4. *macrophylla* (HBK.) Gilg
5. *purpusii* Brandg.
6. *mollis* (Cham. & Schlechtd.) Standl.
7. *perplexa* Nevl.
8. *monocephala* Donn. Sm.
9. *belleriana* Urb.
10. *equatorialis* Nevl.
11. *oblongifolia* Britt. & Wils.
12. *calcicola* Ekm. ex Urb.
13. *occidentalis* (Sw.) Krug & Urb.
14. *liebmannii* Nevl.
15. *mexiae* Nevl.
16. *guacacoa* Wr. ex Griseb.
17. *crassifolia* (Poir.) Meissn.
18. *philippiana* Krug & Urb.
19. *brasiliensis* Mart. & Zucc.
20. *angustifolia* Wr. ex Griseb.
21. *cuneata* (Griseb.) Radlk.
 - 21a. ssp. *cuneata*
 - 21b. ssp. *uniflora* (Urb. & Ekm.) Nevl.
22. *americana* (Mill.) J. R. Johnston
 - 22a. ssp. *americana*
 - 22b. ssp. *salicifolia* (HBK.) Nevl.
 - 22c. ssp. *cestrifolia* (HBK.) Nevl.
 - 22d. ssp. *guatemalensis* Nevl.

- 22e. ssp. *tinifolia* (Sw.) Nevl.
- 22f. ssp. *ecuadorensis* (Domke) Nevl.
- 22g. ssp. *caribaea* (Griseb.) Nevl.
23. *flavida* Lundell
24. *macrocarpa* Nevl.
25. *alainii* Nevl.
26. *pavonii* Meissn.
27. *pseudosalix* Domke
28. *anomala* (HBK.) Nevl.
29. *radiata* Donn. Sm.
30. *tuerckheimiana* Donn. Sm.
31. *selerorum* Gilg
32. *brevifolia* Nevl.
33. *punctulata* Urb.
34. *ficina* Standl. & Steyerem.

SUBGENUS II. NEIVIRA

35. *utilis* Warm.
36. *espinosae* Monachino
37. *alpestris* (Gardn.) Benth. & Hook. f.
38. *schwackeana* Taub.
39. *racemosa* Griseb.
40. *coriacea* Taub.
41. *sellowiana* Taub.
42. *beta* Taub.
43. *sanctae-teresae* Nevl.
44. *martii* Meissn.
45. *gemmiflora* (Meirs) Domke
46. *boliviana* Nevl.

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